

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 12,2 b  
Edition : 28.09.89  
Replaces : 31.3.89  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 761  
  
Injection pump  
Pump designation : PE6P120A320RS3206  
EP type number : 0 411 826 773  
Governor  
Governor design. : RSV250...900P4A374-6  
Governor no. : 0 421 833 283

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.5

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 275.5...277.5

1000 : (272.5...280.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.70  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 985...1015  
3rd rack travel in: 4.00  
Speed rpm : 995...1025  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 380...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 1200  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 240  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 770  
Rack travel in m: 11.20...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 177.0...179.0  
1000 s: (174.0...182.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (250.0...290.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 12,2 b1  
Edition : 28.09.89  
Replaces : 11.11.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 761A  
  
Injection pump  
Pump designation : PE6P120A32DRS3206  
EP type number : 0 411 826 773  
Governor  
Governor design. : RSV250...900P4A374-6  
Governor no. : 0 421 833 283

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 5.0...5.2  
Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 290.5...292.5  
1000 : (287.5...295.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 11.10  
Speed rpm : 1020...1030  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1160  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 380...440

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 1200  
Rack travel mm : 12.10...12.20

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 360  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 1030  
Rack travel in m: 11.70...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 177.0...179.0  
1000 s: (174.0...182.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 8.60...8.80

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 12,2 b2  
Edition : 02.10.89  
Replaces : 9.12.88  
Test oil : ISO-4113

Combination no. : 0 401 876 762

Injection pump  
Pump designation : PE6P120A320RS3206  
EP type number : 0 411 826 773  
Governor  
Governor design. : RSV250...900P4A374-7  
Governor no. : 0 421 833 284

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TMD 122 A (HD)

1st version kW : 236.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness : 6.00X1.50X1000  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 5.0...5.2  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)

Spread cm3 : 0.5  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 212.5...214.5

1000 : (209.5...217.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 8.90  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 940...970  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 370...430

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 900  
Rack travel mm : 9.90...10.00

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 430  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 610  
Rack travel in m: 9.60...9.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 173.0...175.0  
1000 s: (170.0...178.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 910...920

#### STARTING FUEL DELIVERY

Speed rpm : 100

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Rack travel in mm : 8.40...8.60

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 c  
Edition : 02.10.89  
Replaces : 9.6.89  
Test oil : ISO-4113

Combination no. : 0 401 876 769

Injection pump  
Pump designation : PE6P120A320RS3206-2  
EP type number : 0 411 826 784  
Governor  
Governor design. : RSV250..1300POA374-8  
Governor no. : 0 421 833 320

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TAMD71A PD

1st version kW : 280.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 5.1...5.3  
Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 235.5...237.5  
1000 : (232.5...240.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.70  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1375...1405  
3rd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.7  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 450...510

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 1200  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 7.40...7.60  
2nd pressure hPa : 960  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 485  
Rack travel in m: 7.80...8.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1295...1305

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 7.30...7.50

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 12,0 a  
Edition : 13.12.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 770  
  
Injection pump  
Pump designation : PE6P110A320LS3852  
EP type number : 0 411 816 768  
Governor  
Governor design. : RSV400...900P1A544  
Governor no. : 0 421 833 326

Customer-spec. information  
Customer : LIEBHERR

Engine : D 9306T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
                  : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-75-120-195-240-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 890

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 13.8...14.1

100 s: (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 890

Del. quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 38...46

### Testing:

1st rack travel in: 10.70

Speed rpm : 930...940

2nd rack travel in: 4.00

Speed rpm : 945...975

3rd rack travel in: 4.00

Speed rpm : 950...980

4th rack travel in: 1120

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.4

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00

Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 890

Rack travel in m: 11.70...11.80

2nd speed rpm : 500

Rack travel in m: 11.70...11.90

3rd speed rpm : 420

Rack travel in m: 12.90...13.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 140.0...144.0

1000 s: (137.0...147.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 930...940

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 150.0...170.0

1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Del.quantity cm<sup>3</sup>/ : 13.0...18.0

1000 s: (10.5...20.5)

Spread cm<sup>3</sup> : 4.50

1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 12,9 b  
Edition : 01.12.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 771  
Injection pump  
Pump designation : PE6P120A320RS3244  
EP type number : 0 411 826 788  
Governor  
Governor design. : RSV250...1000POA545  
Governor no. : 0 421 833 329

Customer-spec. information  
Customer : ENASA

Engine : 98 W1AD.MR4

1st version kW : 309.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
: (3.25...3.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 12.60...12.70  
Del.quantity cm3/ : 26.0...26.2  
100 s: (25.7...26.5)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : ?  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 2.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1400  
Del.quantity : 260.0...262.0  
1000 : (257.0...265.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 34...42

Testing:

1st rack travel in: 11.60  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 3.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 3.40...3.60  
Rack travel in mm : 2.00  
Speed rpm : 270...330

#### TORQUE CONTROL

Dimension a mm : 2.90  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.50...12.70  
2nd speed rpm : 450  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 300  
Rack travel in m: 13.80...14.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1400  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.80  
2nd pressure hPa : 970  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 510  
Rack travel in m: 9.30...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 141.5...143.5  
1000 s: (138.5...146.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Navy



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 j  
 Edition : 09.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 772  
 Injection pump  
 Pump designation : PE6P120A320RS3200  
 EP type number : 0 411 826 766  
 Governor  
 Governor design. : RSV250...1000POA545-  
 1  
 Governor no. : 0 421 833 330

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1E0.MR4

1st version kW : 250.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness : 6.00X1.50X1000  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.3...3.7

Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:  
1st rack travel in: 10.60  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

TORQUE CONTROL  
Dimension a mm : 2.90  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 300  
Rack travel in m: 12.80...13.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.60...11.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 790  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 540  
Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 133.5...135.5  
1000 s: (130.5...138.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 t 1  
Edition : 15.08.89  
Replaces : 16.6.88  
Test oil : ISO-4113

Combination no. : 0 401 878 706

Injection pump  
Pump designation : PE8P110A320LS3813-10  
EP type number : 0 411 818 712  
Governor  
Governor design. : RSV350...750POA824-2  
Governor no. : 0 421 833 228

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 173.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 14.2...14.4

100 s: (13.9...14.6)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0  
Rack travel in mm : 7.2...7.5  
Del.quantity cm3/ : 1.4...1.8  
100 s: (1.1...2.0)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 142.0...144.0  
1000 : (139.5...146.5)  
Spread cm3 : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Testing:

1st rack travel in: 12.10  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...793  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.35

#### Testing:

Speed rpm : 100  
Minimum rack travel: 17.50  
Speed rpm : 350  
Rack travel in mm : 7.20...7.50

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack travel: 10.70  
Speed rpm : 1175...1185

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

Observe VDT-I-420/120

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 p 2  
Edition : 15.08.89  
Replaces : 9.3.87  
Test oil : ISO-4113

Combination no. : 0 401 878 708

Injection pump  
Pump designation : PE8P120A320LS3816-10  
EP type number : 0 411 828 715  
Governor  
Governor design. : RSV450...1150POA823-1  
Governor no. : 0 421 833 243

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 243.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 450.0  
Rack travel in mm : 4.4...5.6  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1130  
Del. quantity : 158.0...160.0  
1000 : (155.0...163.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 38...46

25...35 1/min.

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1185...1205  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 4.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 450  
Rack travel in mm : 4.40...4.70  
Rack travel in mm : 2.00  
Speed rpm : 450...520

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 158.0...164.0  
1000 s: (155.0...167.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 16,0 a  
Edition : 13.12.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 878 714  
  
Injection pump  
Pump designation : PE8P110A520/4LS3853  
EP type number : 0 411 818 720  
Governor  
Governor design. : RSV400...900P1A544  
Governor no. : 0 421 833 326

Customer-spec. information  
Customer : LIEBHERR

Engine : D 9308 TB

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 3-  
5- 4

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 890

Rack travel in mm : 13.80...13.90

Del.quantity cm<sup>3</sup>/ : 17.5...17.8

100 s: (17.2...18.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 890

Del.quantity : 175.0...178.0

1000 : (172.5...180.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 39...47

### Testing:

1st rack travel in: 12.80

Speed rpm : 930...940

2nd rack travel in: 4.00

Speed rpm : 945...975

3rd rack travel in: 4.00

Speed rpm : 950...980

4th rack travel in: 1120  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.4

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00

Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 890

Rack travel in m: 13.80...13.90

2nd speed rpm : 500

Rack travel in m: 13.80...14.00

3rd speed rpm : 420

Rack travel in m: 15.00...15.60

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 172.0...176.0

1000 s: (169.0...179.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 930...940

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 150.0...170.0

1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Del.quantity cm<sup>3</sup>/ : 13.0...18.0

1000 s: (10.5...20.5)

Spread cm<sup>3</sup> : 4.50

1000 s: (7.50)

Remarks:

A20



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 i 4  
 Edition : 13.12.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 879 706

Injection pump  
 Pump designation : PE10P110A320LS3818-11  
 EP type number : 0 411 819 706  
 Governor  
 Governor design. : RSV750...1050POA823-7  
 Governor no. : 0 421 833 323

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 423

1st version kW : 251.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

A21

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - , : 0.50 (0.75)  
 Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1030

---

Rack travel in mm : 11.00...11.10

---

Del.quantity cm3/ : 12.3...12.5  
 100 s: (12.0...12.7)

---

Spread cm3 : 0.4  
 100 s: (0.8)

---

2nd speed rpm : 750.0  
 Rack travel in mm : 6.1...6.6  
 Del.quantity cm3/ : 1.2...2.0  
 100 s: (0.9...2.2)  
 Spread cm3 : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1030  
 Del.quantity : 123.0...125.0  
 1000 : (120.5...127.5)  
 Spread cm3 : 4.00  
 1000 : (8.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 32...40

Forage harvester

Testing:

1st rack travel in: 10.00  
Speed rpm : 1060...1070  
2nd rack travel in: 4.00  
Speed rpm : 1085...1100  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...28  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 750  
Rack travel in mm : 6.10...6.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 102.0...108.0  
1000 s: (99.0...111.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1060...1070

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

APPLICATION

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a40  
 Edition : 02.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 047  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 3  
 EP type number : 0 412 026 051  
 Governor  
 Governor design. : RQ300/1100PA679  
 Governor no. : 0 421 801 228

Customer-spec. information  
 Customer : MAN

Engine : D2866KUL

1st version kW : 265.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 22.7...22.9

100 s : (22.4...23.2)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm3 : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.30  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 13.30...13.50  
2nd speed rpm : 1100  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 965  
Rack travel in m: 13.10...13.30  
4th speed rpm : 1010  
Rack travel in m: 12.70...13.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 250  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 700  
Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

A24

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 118.0...120.0  
1000 s: (115.0...123.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (205.0...225.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7717

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a21  
 Edition : 02.10.89  
 Replaces : 29.1.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 057  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300...1100PA700-1  
 Governor no. : 0 421 813 528

Customer-spec. information  
 Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.40...1.60

2nd speed rpm : 850

travel mm : 5.60...5.90

3rd speed rpm : 1100

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 9.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 1100  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 850  
Rack travel in m: 11.00...11.20  
4th speed rpm : 975  
Rack travel in m: 10.70...11.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280

Rack travel in m: 10.50...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 206.0...208.0  
1000 s: (203.0...211.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 208.0...214.0  
1000 s: (205.0...217.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 9.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a19  
Edition : 02.10.89  
Replaces : 7.12.87  
Test oil : ISO-4113

Combination no. : 0 402 036 058

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA684-1  
Governor no. : 0 421 801 344

Customer-spec. information  
Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

A27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.7...4.9  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 45

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000  
Del.quantity : 202.0...204.0  
1000 : (199.0...207.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.70  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.90...12.20  
2nd speed rpm : 1100  
Rack travel in m: 10.70...10.90  
3rd speed rpm : 875  
Rack travel in m: 11.80...12.00  
4th speed rpm : 950  
Rack travel in m: 11.20...11.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

A28

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 205.0...209.0  
1000 s: (202.0...212.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 198.0...204.0  
1000 s: (195.0...207.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7756



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a31  
Edition : 24.11.89  
Replaces : 10.2.89  
Test oil : ISO-4113  
Combination no. : 0 402 036 073  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-4  
Governor no. : 0 421 801 425

Customer-spec. information  
Customer : MAN

Engine : D2866KUH

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 750  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 880  
Rack travel in m: 12.30...12.50  
4th speed rpm : 925  
Rack travel in m: 11.70...12.00

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 520  
Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

B02

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 238.0...244.0  
1000 s: (235.0...247.0)  
Aneroid pressure h: 520  
Speed rpm : 500  
Del.quantity cm3/ : 191.0...197.0  
1000 s: (188.0...200.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7904

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a34  
Edition : 24.11.89  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 0 402 036 075

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-5  
Governor no. : 0 421 801 434

Customer-spec. information  
Customer : MAN

Engine : D2866TUH

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 350  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 190.0...196.0  
1000 s: (187.0...199.0)  
Aneroid pressure h: 350

B04

Speed rpm : 500  
Del.quantity cm3/ : 164.0...176.0  
1000 s: (161.0...179.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7892

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a35  
Edition : 08.09.89  
Replaces : 7.4.89  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 076  
  
Injection pump  
Pump designation : PES6P120A720/3LS470-4  
EP type number : 0 412 026 055  
Governor  
Governor design. : RQV300...1100PA700-5  
Governor no. : 0 421 813 713

Customer spec. information  
Customer : MAN

Engine : D2866LFG

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.50...1.90

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 850

travel mm : 5.50...5.90

4th speed rpm : 1100

travel mm : 7.40...7.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 202.0...204.0  
1000 : (199.0...207.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version.  
Control Lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 1100  
Rack travel in m: 10.90...11.00  
3rd speed rpm : 865  
Rack travel in m: 11.30...11.40  
4th speed rpm : 985  
Rack travel in m: 10.90...11.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 85

Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 205.0...209.0  
1000 s: (202.0...212.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 198.0...204.0  
1000 s: (195.0...207.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7911

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a37  
Edition : 24.11.89  
Replaces : 24.5.89  
Test oil : ISO-4113

Combination no. : 0 402 036 077

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-6  
Governor no. : 0 421 801 466

Customer-spec. information  
Customer : MAN

Engine : D2866TUH/001

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 19.5...19.7

100 s: (19.2...20.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.2...5.4  
Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000  
Del.quantity : 195.0...197.0  
1000 : (192.0...200.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750  
Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 1100  
Rack travel in m: 11.50...11.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.20...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 190  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 350  
Rack travel in m: 10.10...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (201.0...211.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7893

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a38  
 Edition : 15.12.89  
 Replaces : 9.6.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 078  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA813-8  
 Governor no. : 0 421 801 483

Customer-spec. information  
 Customer : MAN

Engine : D2866LF/290

1st version kW : 213.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.5

Testing:

1st rack travel in: 8.70  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 1100  
Rack travel in m: 9.70...9.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.40...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 85  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 160  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)

Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7760

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a39  
 Edition : 25.08.89  
 Replaces : 2.6.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 079  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300...1100PA876  
 Governor no. : 0 421 813 661

Customer spec. information  
 Customer : MAN

Engine : D2866LF

1st version kW : 213.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.30...10.40

Del. quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...2.00

2nd speed rpm : 850

travel mm : 6.00...6.20

3rd speed rpm : 1100

travel mm : 8.10...8.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

#### Testing:

1st rack travel in: 8.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.80...9.90  
3rd speed rpm : 925  
Rack travel in m: 10.10...10.20  
4th speed rpm : 975  
Rack travel in m: 9.80...10.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 85  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 160

B12

Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 j4  
Edition : 14.07.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 726  
Injection pump  
Pump designation : PES6P120A720/3LS3205  
EP type number : 0 412 026 729  
Governor  
Governor design. : RQ300/1100PA813-2  
Governor no. : 0 421 801 416

Customer-spec. information  
Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C. : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.1...4.3  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 234.0...236.0  
1000 : (231.0...239.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7889

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 j  
 Edition : 11.05.89  
 Replaces : 28.11.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 726  
 Injection pump  
 Pump designation : PES6P120A720LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/1100PA813-2  
 Governor no. : 0 421 801 416

Customer-spec. information  
 Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1145...1160

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7889



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 k3  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 727  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQV300...1100PA876-1  
 Governor no. : 0 421 813 670

Customer-spec. information  
 Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.1...4.3  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30  
 2nd speed rpm : 450  
 travel mm : 3.10...3.50  
 3rd speed rpm : 900  
 travel mm : 6.00...6.40  
 4th speed rpm : 1100  
 travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1175  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del.quantity : 234.0...236.0  
 1000 : (231.0...239.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.00...13.10  
3rd speed rpm : 1000  
Rack travel in m: 12.90...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 7890

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 k  
Edition : 11.05.89  
Replaces : 4.11.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 727  
  
Injection pump  
Pump designation : PES6P120A720LS3205  
EP type number : 0 412 026 729  
Governor  
Governor design. : RQV300...1100PA876-1  
Governor no. : 0 421 813 670

Customer-spec. information  
Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.30

2nd speed rpm : 450  
travel mm : 3.10...3.50

3rd speed rpm : 900  
travel mm : 6.00...6.40

4th speed rpm : 1100  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 k4  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 728  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 -1  
 EP type number : 0 412 026 732  
 Governor  
 Governor design. : RQV300...1100PA876-2  
 Governor no. : 0 421 813 712

Customer-spec. information  
 Customer : MAN

Engine : D2866LXG

1st version kW : 265.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.60...2.00

2nd speed rpm : 450  
 travel mm : 2.80...3.20

3rd speed rpm : 800  
 travel mm : 5.30...5.70

4th speed rpm : 1100  
 travel mm : 8.00...8.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 228.0...230.0  
1000 : (225.0...233.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

#### Testing:

1st rack travel in: 11.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

#### CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

#### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 150  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 510  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

B22

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1140...1150

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7913

## Note remarks

Combination no. : 0 402 036 728

Customer spec. information  
Customer : MAN

Engine : D2866LXG

1st version kW : 265.0  
Rated speed : 2200

Test oil  
inlet temp., C . : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

Phasing : 0-60-120-180-240-300

Tolerance  $\pm$  . . . : 0.50 (0.75)

Time to cyl. no. : 6

1st speed      rpm : 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 22.8...23.0

100 s: (22.5...23.3)

Spread      cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

1st speed rpm : 300  
travel mm : 1.60...2.00

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 800  
travel mm : 5.30 5.30

travel mm : 5.30...5.70  
4th speed mm : 1100

4th speed rpm : 1100  
travel mm : 8.00 8.20

## Control-lever position

Degree:  $-1$

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

#### Testing:

1st rack travel in: 11.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

#### CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

#### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 150  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 510  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100

B24

Del.quantity cm<sup>3</sup>/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1140...1150

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7913



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 j2  
 Edition : 14.07.89  
 Replaces : 31.3.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 729  
 Injection pump  
 Pump designation : PES6P12DA72OLS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/1100PA813-7  
 Governor no. : 0 421 801 474

Customer-spec. information  
 Customer : MAN

Engine : D2866LUH

1st version kW : 273.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 885  
Rack travel in m: 13.30...13.60  
4th speed rpm : 935  
Rack travel in m: 13.00...13.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.20...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.50  
2nd pressure hPa : 190  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 520  
Rack travel in m: 11.80...12.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200

Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1145...1160

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7946

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 n  
Edition : 15.08.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 730  
Injection pump  
Pump designation : PES6P120A720/3LS3237  
EP type number : 0 412 026 734  
Governor  
Governor design. : RQ300/1100PA813-9  
Governor no. : 0 421 801 487

Customer-spec. information  
Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel Less than

full load rack tr: 11.80  
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

## Note remarks

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 11.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.90...13.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 150  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 510  
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 990...1000

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 2-7942

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 j3  
Edition : 09.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 732  
Injection pump  
Pump designation : PES6P120A720/3LS3205  
EP type number : 0 412 026 729  
Governor  
Governor design. : RQ300/950PA813-10  
Governor no. : 0 421 801 493

Customer spec. information  
Customer : MAN

Engine : D2866LXF/A39

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70

Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.20...13.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 500

#### 1st pressure hPa : -

Rack travel in m: 9.60...9.80

#### 2nd pressure hPa : 150

Rack travel in m: 9.90...10.00

#### 3rd pressure hPa : 510

Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Aneroid pressure h: -

CO4

Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 995...1010

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7962



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 10,6 b  
Edition : 15.12.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 044 021  
Injection pump  
Pump designation : PES4P120A320RS451  
EP type number : 0 412 024 020  
Governor  
Governor design. : RQV350...900PA934-2  
Governor no. : 0 421 813 818

Customer-spec. information  
Customer : BAUDOUIN

Engine : DNP4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 7.6...7.8

Del.quantity cm3/ : 2.8...3.4

100 s: (-)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.80...1.20

2nd speed rpm : 500  
travel mm : 3.00...3.40

3rd speed rpm : 750  
travel mm : 5.80...6.20

4th speed rpm : 900  
travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 940

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 11.60  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 29...37

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.20  
Speed rpm : 350  
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION  
Speed rpm : 350...440

START CUT-OUT

Speed 1/min : 300 (320)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 940...950

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 175.0...195.0  
1000 s: (171.0...199.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 13,8 s2  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 115  
  
Injection pump  
Pump designation : PES6P120A820LS249  
EP type number : 0 412 026 024  
Governor  
Governor design. : RQV300...925PA204/4R  
Governor no. : 0 421 813 159

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8217.12.024

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 925

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 18.5...18.9

100 s: (18.2...19.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm3 : 0.6

100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.90...2.30

2nd speed rpm : 400

travel mm : 3.10...3.70

3rd speed rpm : 800

travel mm : 6.50...6.80

4th speed rpm : 925

travel mm : 7.80...8.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 925

Del.quantity : 185.0...189.0

1000 : (182.0...192.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 55...63

Testing:

1st rack travel in: 9.50  
Speed rpm : 965...975  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 10...18

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 300...395

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 965...975

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

APPLICATION

Rail car

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 a  
Edition : 21.04.89  
Replaces : 14.8.87  
Test oil : ISO-4113

Combination no. : 0 402 046 148

Injection pump  
Pump designation : PES6P100A820LS351  
EP type number : 0 412 006 028  
Governor  
Governor design. : RQ300/1100PA327R  
Governor no. : 0 421 801 062

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 176.5  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 7.5...7.7  
Del.quantity cm3/ : 0.6...1.2  
100 s: (0.3...1.4)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 14.30...15.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 122.0...124.0  
1000 : (120.0...126.0)  
Spread cm3 : 3.00  
1000 : (6.00)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 500  
Rack travel in mm : 14.7

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.6

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.60  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 g  
Edition : 21.04.89  
Replaces : 11.85  
Test oil : ISO-4113

Combination no. : 0 402 046 215

Injection pump  
Pump designation : PES6P110A820LS422  
EP type number : 0 412 016 057  
Governor  
Governor design. : RQ300/1100PA327-2  
Governor no. : 0 421 801 136

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 176.5  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 13.0...13.2

100 s: (12.7...13.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm<sup>3</sup>/ : -  
100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 130.0...132.0

1000 : (127.5...134.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 10.00  
Speed rpm : 300  
Rack travel in mm : 7.60...7.80  
Rack travel in mm : 2.00  
Speed rpm : 375...415

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 119.0...123.0  
1000 s: (116.0...126.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.60...7.80  
Spread cm3 : 4.00  
1000 s: (-)

Remarks:

:

APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 h 3  
 Edition : 21.04.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 218  
 Injection pump  
 Pump designation : PES6P110A820LS422  
 EP type number : 0 412 016 057  
 Governor  
 Governor design. : RQ300/1100PA327-1  
 Governor no. : 0 421 801 140

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 147.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 10.3...10.5

100 s: (10.0...10.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 103.0...105.0

1000 : (100.0...108.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.60

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 75.0...79.0  
1000 s: (72.0...82.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 c  
Edition : 10.02.89  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 402 046 219

Injection pump  
Pump designation : PES6P120A320RS426  
EP type number : 0 412 026 039  
Governor  
Governor design. : RQV250...1100PA570  
Governor no. : 0 421 813 295

Customer-spec. information  
Customer : RVI

Engine : MIDS 063540

1st version kW : 195.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 3.9...4.1  
Del.quantity cm3/ : 1.5...2.1  
100 s: (1.2...2.4)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.50...1.60  
2nd speed rpm : 800  
travel mm : 4.70...4.90  
3rd speed rpm : 1100  
travel mm : 6.80...7.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1270  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h: 700  
Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control Lever  
position degrees: 57...65

Testing:  
1st rack travel in: 8.00  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 5...13

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.10  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 275...400

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 8.90...9.10  
3rd speed rpm : 1020  
Rack travel in m: 9.30...9.40  
4th speed rpm : 890  
Rack travel in m: 9.90...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 290  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 245  
Rack travel in m: 8.90...9.10

START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 162.0...168.0  
1000 s: (159.0...171.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (121.0...149.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12, cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L 1  
 Edition : 21.04.89  
 Replaces : 11.85  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 228  
 Injection pump  
 Pump designation : PES6P110A820LS442  
 EP type number : 0 412 016 060  
 Governor  
 Governor design. : RQ300/1100PA327-2  
 Governor no. : 0 421 801 136

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : 407 H

1st version kW : 177.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 12.8...13.0

100 s: (12.5...13.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.7...7.9  
 Del.quantity cm3/ : 1.3...1.9  
 100 s: (1.0...2.1)  
 Spread cm3 : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 128.0...130.0

1000 : (125.5...132.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.30

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.40  
Speed rpm : 300  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 110.0...114.0  
1000 s: (107.0...117.0)  
Spread cm3 : -  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L20  
Edition : 21.04.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 234  
Injection pump  
Pump designation : PES6P110A820LS442  
EP type number : 0 412 016 060  
Governor  
Governor design. : RQ300/1100PA327-5  
Governor no. : 0 421 801 163

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 407 STEHEND

1st version kW : 162.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 11.6...11.8

100 s: (11.3...12.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 116.0...118.0

1000 : (113.5...120.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100

Minimum rack trave: 9.50

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

Speed rpm : 375...415

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600

Del.quantity cm3/ : 93.0...97.0  
1000 s: (90.0...100.0)

Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 a 3  
Edition : 01.09.89  
Replaces : 11.85  
Test oil : ISO-4113  
Combination no. : 0 402 046 300  
Injection pump  
Pump designation : PES6P120A32ORS419  
EP type number : 0 412 026 037  
Governor  
Governor design. : RQV275...1100PA495-5  
Governor no. : 0 421 813 446

Customer spec. information  
Customer : RVI

Engine : MIDR 062045

1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm<sup>3</sup>/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 4.6...4.8  
Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.20  
2nd speed rpm : 450  
travel mm : 3.40...3.80  
3rd speed rpm : 850  
travel mm : 6.10...6.30  
4th speed rpm : 1100  
travel mm : 8.00...8.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 700  
Del.quantity : 162.0...164.0  
1000 : (159.0...167.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

### Testing:

1st rack travel in: 8.00  
Speed rpm : 1170...1180  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 5...13

### Testing:

Speed rpm : 200  
Minimum rack travel: 6.30  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80

## CONSTANT REGULATION

Speed rpm : 285...400

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 9.00...9.10

## Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.80...8.00  
2nd pressure hPa : 220  
Rack travel in m: 8.60...8.70  
3rd pressure hPa : 195  
Rack travel in m: 8.10...8.30

## START CUT-OUT

Speed 1/min : 195 (215)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm3/ : 150.0...156.0  
1000 s: (147.0...159.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 102.0...104.0  
1000 s: (99.0...107.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.00  
Speed rpm : 1170...1180

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

## LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 a 6  
 Edition : 02.01.90  
 Replaces : 16.12.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 313  
 Injection pump  
 Pump designation : PES6P120A32ORS419  
 EP type number : 0 412 026 037  
 Governor  
 Governor design. : RQV275...1050PA495-8  
 Governor no. : 0 421 813 482

Customer-spec. information  
 Customer : RVI

Engine : MIDS062045

1st version kW : 169.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 10.30...10.40  
 Del.quantity cm3/ : 16.1...16.3  
 100 s: (15.8...16.6)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm3/ : 2.5...3.1  
 100 s: (2.2...3.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.20  
 2nd speed rpm : 450  
 travel mm : 3.30...3.80  
 3rd speed rpm : 800  
 travel mm : 5.70...6.00  
 4th speed rpm : 1050  
 travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 700  
 Del.quantity : 161.0...163.0  
 1000 : (158.0...166.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.30

Speed rpm : 1125...1135

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 60...64

Testing:

Speed rpm : 200

Minimum rack travel: 6.60

Speed rpm : 275

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 360

Rack travel in m: 9.80...9.90

3rd pressure hPa : 160

Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm<sup>3</sup>/ : 153.0...159.0

1000 s: (150.0...162.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 109.0...111.0

1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 160.0...180.0

1000 s: (156.0...184.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.40

Del.quantity cm<sup>3</sup>/ : 25.0...31.0

1000 s: (22.0...34.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5, cam angle  
after start of delivery cyl. 1

APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 d 6  
Edition : 02.10.89  
Replaces : 29.3.89  
Test oil : ISO-4113

Combination no. : 0 402 046 329

Injection pump  
Pump designation : PES6P120A320RS419-2  
EP type number : 0 412 026 048  
Governor  
Governor design. : RQ275/950PA843  
Governor no. : 0 421 801 378

Customer-spec. information  
Customer : RVI

Engine : MIDS/PS062045D/A

1st version kW : 129.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.00...8.10

Del.quantity cm3/ : 10.4...10.6

100 s: (10.1...10.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.20...4.40

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 525

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Del.quantity : 104.0...106.0

1000 : (101.0...109.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 525

Rack travel in mm : 20.0

Testing:

1st rack travel in: 6.50

Speed rpm : 1015...1030

2nd rack travel in: 4.00

Speed rpm : 1040...1070

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 4.4

#### Testing:

Speed rpm : 200

Minimum rack trave: 5.20

Speed rpm : 275

Rack travel in mm : 3.50...3.70

Rack travel in mm : 2.00

Speed rpm : 300...340

#### TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 500

Rack travel in m: 8.00...8.10

2nd speed rpm : 950

Rack travel in m: 7.40...7.50

3rd speed rpm : 775

Rack travel in m: 7.60...7.80

#### START CUT-OUT

Speed 1/min : 210 (230)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 124.0...128.0

1000 s: (121.0...131.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 6.50

Speed rpm : 1015...1030

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0

1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 3.50...3.70

Remarks:

Start-of-delivery mark 9.5, cam angle  
after start of delivery cyl. 1

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 c  
Edition : 06.04.88  
Replaces : 26.2.88  
Test oil : ISO-4113

Combination no. : 0 402 046 331

Injection pump  
Pump designation : PES6P120A320RS514  
EP type number : 0 412 026 052  
Governor  
Governor design. : RQV275...1000PA495-9  
Governor no. : 0 421 813 672

Customer-spec. information  
Customer : RVI

Engine : MIDR062045 K

1st version kW : 176.5  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.40...1.60  
2nd speed rpm : 500  
travel mm : 3.80...4.30  
3rd speed rpm : 800  
travel mm : 5.70...6.10  
4th speed rpm : 1000  
travel mm : 7.10...7.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1120  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1000  
Del.quantity : 165.0...167.0  
1000 : (162.0...170.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 47...55

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1075...1085  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 275  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 285...400

TORQUE CONTROL  
Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 1000  
Rack travel in m: 9.90...10.00  
3rd speed rpm : 730  
Rack travel in m: 11.10...11.20  
4th speed rpm : 850  
Rack travel in m: 10.30...10.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.50...11.60

Measurement  
Speed 1/min : 500  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 280  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 120  
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 195 (215)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm3/ : 153.0...157.0  
1000 s: (150.0...160.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 106.0...108.0  
1000 s: (103.0...111.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1075...1085

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (135.0...165.0)

## LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 a 8  
Edition : 10.02.89  
Replaces : 5.8.88  
Test oil : ISO-4113

Combination no. : 0 402 046 332

Injection pump  
Pump designation : PES6P120A320RS419  
EP type number : 0 412 026 037  
Governor  
Governor design. : RQ275/1050PA844-1  
Governor no. : 0 421 801 421

Customer-spec. information  
Customer : RVI

Engine : MIPRO62045A

1st version kW : 210.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.10...10.20

Del.quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 4.6...4.8  
Del.quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1110...1125

2nd rack travel in: 4.00

Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.9

#### Testing:

Speed rpm : 200  
Minimum rack travel: 5.90  
Speed rpm : 275  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 310...350

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.10...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.20  
2nd pressure hPa : 360  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 160  
Rack travel in m: 8.60...8.80

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm3/ : 168.0...174.0  
1000 s: (165.0...177.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 105.0...107.0  
1000 s: (102.0...110.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1110...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.10...4.30

Remarks:

Start-of-delivery mark 9.5, cam angle  
after start of delivery cyl. 1

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 d  
Edition : 10.02.89  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 0 402 046 333

Injection pump  
Pump designation : PES6P120A320RS514  
EP type number : 0 412 026 052  
Governor  
Governor design. : RQV375...900PA885  
Governor no. : 0 421 813 689

Customer-spec. information  
Customer : RVI

Engine : MIDR062045

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 5.20...5.40

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.00...1.20

2nd speed rpm : 500  
travel mm : 3.00...3.40

3rd speed rpm : 750  
travel mm : 5.90...6.30

4th speed rpm : 900  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 930

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

Navy

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 11.70  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.80  
Speed rpm : 375  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 420...590

START CUT-OUT

Speed 1/min : 295 (315)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

APPLICATION

D04

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 L  
Edition : 15.08.89  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 0 402 046 336

Injection pump  
Pump designation : PES6P120A720RS517  
EP type number : 0 412 026 054  
Governor  
Governor design. : RQ750PA895  
Governor no. : 0 421 801 447

Customer-spec. information  
Customer : MAN

Engine : D2866TUE

1st version kW : 190.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 4.4...4.6  
Del.quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 375

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 210.0...212.0  
1000 : (207.0...215.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Testing:  
1st rack travel in: 10.80  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 788...801  
4th rack travel in: 900  
Speed rpm : 0.00...1.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:  
: MAN-NR. 2-7849

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 g  
Edition : 02.10.89  
Replaces : 29.3.89  
Test oil : ISO-4113

Combination no. : 0 402 046 337

Injection pump  
Pump designation : PES6P120A320RS52C  
EP type number : 0 412 026 056  
Governor  
Governor design. : RQV275...1050PA906  
Governor no. : 0 421 813 724

Customer-spec. information  
Customer : RVI

Engine : MIDRO62045D

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.4

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 450

travel mm : 3.30...3.80

3rd speed rpm : 800

travel mm : 5.70...6.00

4th speed rpm : 1050

travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 116...124

Testing:

1st rack travel in: 9.30  
Speed rpm : 1125...1135  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 60...68

Testing:

Speed rpm : 200  
Minimum rack travel: 6.60  
Speed rpm : 275  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.40  
2nd pressure hPa : 360  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 160  
Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm3/ : 171.0...177.0  
1000 s: (168.0...180.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 109.0...111.0  
1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 9.30  
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5 cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 i  
Edition : 02.01.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 338  
Injection pump  
Pump designation : PES6P120A32ORS522  
EP type number : 0 412 026 057  
Governor  
Governor design. : RQV275...1000PA912  
Governor no. : 0 421 813 744

Customer-spec. information  
Customer : RVI

Engine : MIDRO62045L

1st version kW : 176.5  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 17.50...18.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60  
& maximum rack tra: 18.00  
Difference, CS : 2.50...4.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 5.5...5.7  
Del.quantity cm3/ : 4.0...4.6  
100 s: (3.7...4.9)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 0.70...0.90  
2nd speed rpm : 500  
travel mm : 3.50...4.10  
3rd speed rpm : 750  
travel mm : 5.30...5.70  
4th speed rpm : 1000  
travel mm : 7.10...7.30  
5th speed rpm : 1400  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1130  
Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 170.0...172.0  
 1000 : (167.0...175.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
 position degrees: 62...70

Testing:

1st rack travel in: 11.00  
 Speed rpm : 1075...1085  
 2nd rack travel in: 4.00  
 Speed rpm : 1200...1230  
 4th rack travel in: 1350  
 Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 12...20

Testing:

Speed rpm : 200  
 Minimum rack trave: 7.40  
 Speed rpm : 275  
 Rack travel in mm : 5.60...5.80

## CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude  
 Compensator Test

1st version

Setting

Speed rpm : 500  
 Pressure hPa : 1000  
 Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.10...10.40

2nd pressure hPa : 240

Rack travel in m: 11.60...11.70

3rd pressure hPa : 140

Rack travel in m: 10.60...10.90

## START CUT-OUT

Speed 1/min : 195 (215)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
 Speed rpm : 600  
 Del.quantity cm3/ : 152.0...158.0  
 1000 s: (149.0...161.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 97.0...99.0  
 1000 s: (94.0...102.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00  
 Speed rpm : 1075...1085

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 130.0...160.0  
 1000 s: (130.0...160.0)

## LOW IDLE

Speed rpm : 275  
 Rack travel in mm : 5.50...5.70  
 Del.quantity cm3/ : 40.0...46.0  
 1000 s: (37.0...49.0)  
 Spread cm3 : 8.00  
 1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 a 9  
Edition : 15.08.89  
Replaces : 14.4.89  
Test oil : ISO-4113

Combination no. : 0 402 046 773

Injection pump  
Pump designation : PES6P110A820LS3131  
EP type number : 0 412 016 715  
Governor  
Governor design. : RQ300/1100PA800  
Governor no. : 0 421 801 347

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
: (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 13.9...14.1

100 s: (13.6...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
Rack travel in mm : 7.2...7.4  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 12.50...13.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del. quantity : 139.0...141.0  
1000 : (136.5...143.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.80  
Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 116.0...119.0  
1000 s: (113.0...122.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Adjust full-load delivery by turning  
temperature-dependent excess-fuel stop  
for starting (TAS).

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN vorl.  
Edition : 3.1.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 776  
Injection pump  
Pump designation : PES6P120A720LS3167  
EP type number : 0 412 026 720  
Governor  
Governor design. : RQ750PA661-2

Customer-spec. information  
Customer : MAN

Engine : D2866LE

1st version kW : 230.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 28.0...28.1

100 s: (27.7...28.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.9...7.1  
Del.quantity cm3/ : 2.4...3.0  
100 s: (2.1...3.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 280.0...281.0  
1000 : (277.0...284.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Testing:  
1st rack travel in: 13.40  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 788...791

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (210.0...250.0)

Remarks:

: MAN-NR. 2-7654  
: (HANDEINGABE)

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 e  
Edition : 25.08.89  
Replaces : 5.2.88  
Test oil : ISO-4113

Combination no. : 0 402 046 784

Injection pump  
Pump designation : PES6P120A320RS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQV275...1000PA728-2  
Governor no. : 0 421 813 599

Customer-spec. information  
Customer : RVI

Engine : MIDR 062045 E

1st version kW : 236.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 5.8...6.0  
Del.quantity cm3/ : 2.3...2.9  
100 s: (2.0...3.2)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.10  
2nd speed rpm : 450  
travel mm : 3.30...3.70  
3rd speed rpm : 800  
travel mm : 5.60...6.00  
4th speed rpm : 1000  
travel mm : 7.00...7.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1170  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 208.0...210.0  
1000 : (205.0...213.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 10.60  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 275  
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION  
Speed rpm : 230...320

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.60...11.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 320  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 160  
Rack travel in m: 9.50...9.70

## START CUT-OUT

Speed 1/min : 195 (215)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 200.0...206.0  
1000 s: (197.0...209.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 95.0...99.0  
1000 s: (92.0...102.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 1065...1075

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

## LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 2, cam angle  
after start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 b  
 Edition : 30.09.88  
 Replaces : 5.6.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 785  
 Injection pump  
 Pump designation : PES6P110A320RS3190  
 EP type number : 0 412 016 720  
 Governor  
 Governor design. : RQV275...1175PA833-1  
 Governor no. : 0 421 813 607

Customer-spec. information  
 Customer : RVI

Engine : MIDR 060226

1st version kW : 154.5  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00  
 & maximum rack tra: 18.0...21.0  
 Difference, CS : 4.00...6.00

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 11.4...11.7

100 s: (11.1...11.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.00...4.20

Del.quantity cm<sup>3</sup>/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.90...1.10

2nd speed rpm : 450  
 travel mm : 3.40...3.80

3rd speed rpm : 800  
 travel mm : 5.10...5.50

4th speed rpm : 1175  
 travel mm : 7.20...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000  
Del.quantity : 114.0...117.0  
1000 : (111.5...119.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

#### Testing:

1st rack travel in: 12.40  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.60  
Speed rpm : 275  
Rack travel in mm : 4.00...4.20

#### CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.40...13.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 360  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 160  
Rack travel in m: 11.50...11.80

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 109.5...114.5  
1000 s: (106.5...117.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 57.0...60.0  
1000 s: (54.5...62.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (86.0...114.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.00...4.20  
Del.quantity cm<sup>3</sup>/ : 15.0...20.0  
1000 s: (12.5...22.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 c  
Edition : 30.09.88  
Replaces : 30.3.87  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 786  
  
Injection pump  
Pump designation : PES6P110A320RS3191  
EP type number : 0 412 016 721  
Governor  
Governor design. : RQV275...1250PA833-2  
Governor no. : 0 421 813 608

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226

1st version kW : 175.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 8.4...8.7

100 s: (8.1...8.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.9...2.4

100 s: (1.6...2.6)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.80...1.20

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 800

travel mm : 4.60...5.00

4th speed rpm : 1250

travel mm : 7.50...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 84.0...87.0

1000 : (81.5...89.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 12.80  
Speed rpm : 1315...1325  
2nd rack travel in: 4.00  
Speed rpm : 1455...1485  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 275  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 280...320

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.80...13.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 160  
Rack travel in m: 13.50...13.60  
3rd pressure hPa : 120  
Rack travel in m: 13.20...13.40

## START CUT-OUT

Speed 1/min : 195 (215)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 83.0...88.0  
1000 s: (80.0...91.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 59.0...62.0  
1000 s: (56.5...64.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.80  
Speed rpm : 1315...1325

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (86.0...114.0)

## LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 19.0...24.0  
1000 s: (16.5...26.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 u  
Edition : 15.08.89  
Replaces : 18.10.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 799  
  
Injection pump  
Pump designation : PES6P110A720RS3104  
EP type number : 0 412 016 712  
Governor  
Governor design. : RQV300...1075PA850-1  
Governor no. : 0 421 813 708

Customer-spec. information  
Customer : KHD

Engine : BF6L413FR/513R

1st version kW : 193.0  
Rated speed : 2150

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1075  
Rack travel in mm : 13.40...13.50  
Del. quantity cm<sup>3</sup>/ : 14.5...14.7  
100 s : (14.2...15.0)  
Spread cm<sup>3</sup> : 0.4  
100 s : (0.7)

2nd speed rpm : 300.0  
Rack travel in mm : 8.0...8.2  
Del. quantity cm<sup>3</sup>/ : 1.6...2.1  
100 s : (1.4...2.4)  
Spread cm<sup>3</sup> : 0.4  
100 s : (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40  
2nd speed rpm : 400  
travel mm : 2.70...3.30  
3rd speed rpm : 600  
travel mm : 4.20...4.80  
4th speed rpm : 1120  
travel mm : 8.40...8.60  
5th speed rpm : 1245  
travel mm : 9.60...10.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1075  
Aneroid pressure h: 900  
Del. quantity : 145.0...147.0  
1000 : (142.0...150.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 12.40

Speed rpm : 1115...1125

2nd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 16...24

Testing:

Speed rpm : 100

Minimum rack travel: 9.60

Speed rpm : 300

Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 300...490

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 13.40...13.50

2nd speed rpm : 600

Rack travel in m: 13.60...13.80

3rd speed rpm : 950

Rack travel in m: 13.50...13.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 450

Pressure hPa : 900

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 450

1st pressure hPa : -

Rack travel in m: 12.60...12.80

2nd pressure hPa : 420

Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 240 (260)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 149.0...154.0

1000 s: (146.5...156.5)

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm<sup>3</sup>/ : 123.0...125.0

1000 s: (120.0...128.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1115...1125

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 a13  
 Edition : 15.08.89  
 Replaces : 4.11.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 803  
 Injection pump  
 Pump designation : PES6P110A820LS3131-1  
 EP type number : 0 412 016 717  
 Governor  
 Governor design. : RQ300/1100PA722-1  
 Governor no. : 0 421 801 461

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 168.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.80  
Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 113.0...116.0  
1000 s: (110.0...119.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Adjust full-load delivery by turning  
temperature-dependent excess-fuel stop  
for starting (TAS).



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 u 4  
 Edition : 02.10.89  
 Replaces : 16.6.89  
 Test oil : ISO-4113

Combination no. : 0 402 046 806

Injection pump  
 Pump designation : PES6P110A72ORS3104  
 EP type number : 0 412 016 712  
 Governor  
 Governor design. : RQV300...1150PA850-4  
 Governor no. : 0 421 813 745

Customer-spec. information  
 Customer : KHD

Engine : BF6L513RC

1st version kW : 210.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

---

Rack travel in mm : 14.00...14.10

---

Del. quantity cm<sup>3</sup>/ : 16.5...16.7

---

100 s: (16.2...17.0)

---

Spread cm<sup>3</sup> : 0.4

---

100 s: (0.7)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 7.4...7.6  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s: (0.9...1.9)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 2.60...3.20  
 3rd speed rpm : 650  
 travel mm : 3.30...3.90  
 4th speed rpm : 1195  
 travel mm : 8.30...8.50  
 5th speed rpm : 1330  
 travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1190  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 900  
 Del. quantity : 165.0...167.0  
 1000 : (162.0...170.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 13.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1315...1345

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 19...27

Testing:

Speed rpm : 100

Minimum rack travel: 9.00

Speed rpm : 300

Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 300...550

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 14.00...14.10

2nd speed rpm : 750

Rack travel in m: 14.20...14.40

3rd speed rpm : 850

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.10...12.30

2nd pressure hPa : 510

Rack travel in m: 13.70...13.80

3rd pressure hPa : 375

Rack travel in m: 12.60...12.90

START CUT-OUT

Speed 1/min : 250 (270)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 750

Del.quantity cm3/ : 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm3/ : 123.0...125.0

1000 s: (120.0...128.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 a15  
 Edition : 02.01.90  
 Replaces : 8.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 808  
 Injection pump  
 Pump designation : PES6P110A820LS3131-1  
 EP type number : 0 412 016 717  
 Governor  
 Governor design. : RQV300..1100PA916-1  
 Governor no. : 0 421 813 749

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 177.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 1150

travel mm : 7.90...8.30

4th speed rpm : 1225

travel mm : 9.10...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread        cm<sup>3</sup> : 4.00  
              1000 : (8.00)

Remarks:

:

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 10.00  
Speed        rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed        rpm : 1185...1215  
4th rack travel in: 1250  
Speed        rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 20...28

#### Testing:

Speed        rpm : 200  
Minimum rack trave: 8.80  
Speed        rpm : 300  
Rack travel in mm : 7.20...7.40

#### CONSTANT REGULATION

Speed        rpm : 300...500

#### START CUT-OUT

Speed        1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed        rpm : 600  
Del.quantity cm<sup>3</sup>/ : 116.0...119.0  
              1000 s: (113.0...122.0)  
Spread        cm<sup>3</sup> : 5.00  
              1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed        rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
              1000 s: (126.0...154.0)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 m1  
Edition : 15.08.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 810  
Injection pump  
Pump designation : PES6P120A720LS3229  
EP type number : 0 412 026 733  
Governor  
Governor design. : RQ750PA661-4  
Governor no. : 0 421 801 361

Customer-spec. information  
Customer : MAN

Engine : D2866TE

1st version kW : 190.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 23.1...23.3

100 s: (22.8...23.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.5...4.9

Del.quantity cm<sup>3</sup>/ : 2.4...3.0

100 s: (2.1...3.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 231.0...233.0

1000 : (228.0...236.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 10.20

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 782...795

3rd rack travel in: 4.00

4th rack travel in: 950

Speed rpm : 0.00...1.00

## INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...175.0  
1000 s: (161.0...179.0)

Remarks:

:

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 f  
 Edition : 09.11.89  
 Replaces : 7.7.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 811  
 Injection pump  
 Pump designation : PES6P11DA32ORS3233  
 EP type number : 0 412 016 728  
 Governor  
 Governor design. : RQV275...1175PA833-4  
 Governor no. : 0 421 813 762

Customer-spec. information  
 Customer : RVI

Engine : MIDR 0602260

1st version kW : 166.0  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00  
 & maximum rack tra: 18.0...21.0  
 Difference, CS : 4.00...6.00

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.50...13.60

Del.quantity cm<sup>3</sup>/ : 11.7...12.0

100 s: (11.4...12.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 2.8...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.40...0.60

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 800

travel mm : 4.60...5.00

4th speed rpm : 1175

travel mm : 6.90...7.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000  
Del.quantity : 117.0...120.0  
1000 : (114.5...122.5)  
Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

#### Testing:

1st rack travel in: 12.50  
Speed rpm : 1255...1265  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 275  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 400  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 160  
Rack travel in m: 10.90...11.30

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm3/ : 111.5...116.5  
1000 s: (108.5...119.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 49.5...52.5  
1000 s: (47.0...55.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1255...1265

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...105.0  
1000 s: (81.0...109.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 28.0...33.0  
1000 s: (25.5...35.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 g  
Edition : 09.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 812  
Injection pump  
Pump designation : PES6P110A320RS3236  
EP type number : 0 412 016 730  
Governor  
Governor design. : RQV275...1175PA833-3  
Governor no. : 0 421 813 656

Customer-spec. information  
Customer : RVI

Engine : MIDR 0602260

1st version kW : 166.0  
Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
: (4.15...4.35)  
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.00  
& maximum rack tra: 18.0...21.0  
Difference, CS : 4.50...6.00

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 11.7...12.0

100 s: (11.4...12.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0  
Rack travel in mm : 4.7...4.9  
Del.quantity cm<sup>3</sup>/ : 2.8...3.3  
100 s: (2.5...3.5)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 0.70...1.10  
2nd speed rpm : 450  
travel mm : 3.00...3.40  
3rd speed rpm : 700  
travel mm : 4.20...4.60  
4th speed rpm : 1175  
travel mm : 6.80...7.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1330  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1175

Aneroid pressure h: 1000  
Del.quantity : 117.0...120.0  
1000 : (114.5...122.5)  
Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

#### Testing:

1st rack travel in: 12.40  
Speed rpm : 1255...1265  
2nd rack travel in: 4.00  
Speed rpm : 1415...1435  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 275  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.40...13.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 400  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 160  
Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm3/ : 111.5...116.5  
1000 s: (108.5...119.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 49.5...52.5  
1000 s: (47.0...55.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1255...1265

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...105.0  
1000 s: (81.0...109.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 28.0...33.0  
1000 s: (25.5...35.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 m2  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 814  
 Injection pump  
 Pump designation : PES6P120A720LS3229  
 EP type number : 0 412 026 733  
 Governor  
 Governor design. : RQ750PA945  
 Governor no. : 0 421 801 512

Customer-spec. information  
 Customer : MAN

Engine : D2866LE

1st version kW : 230.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.7

Del.quantity cm3/ : 2.4...3.0  
 100 s: (2.1...3.3)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 281.0...283.0

1000 : (278.0...286.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 11.50

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 787...800

4th rack travel in: 950

Speed rpm : 0.00...1.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 12.50...12.60

Remarks:

: MAN-NR. 2-7970

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 14,9 f3  
 Edition : 09.11.89  
 Replaces : 24.6.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 048 048  
 Injection pump  
 Pump designation : PES8P120A320RS507  
 EP type number : 0 412 028 023  
 Governor  
 Governor design. : RQV275...1050PA665-3  
 Governor no. : 0 421 813 677

Customer-spec. information  
 Customer : RVI

Engine : MIVR083530 G

1st version kW : 299.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 2- 7- 3-  
 6- 5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.70...11.80  
 Del.quantity cm3/ : 19.6...19.8  
 100 s: (19.3...20.1)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.4  
 Del.quantity cm3/ : 2.0...2.6  
 100 s: (1.7...2.9)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 0.60...1.00  
 2nd speed rpm : 450  
 travel mm : 3.60...4.00  
 3rd speed rpm : 700  
 travel mm : 5.40...5.80  
 4th speed rpm : 1050  
 travel mm : 7.90...8.10  
 5th speed rpm : 1400  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1085  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 700

Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1105...1115  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION  
Speed rpm : 290...410

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...10.00  
2nd pressure hPa : 170  
Rack travel in m: 11.10...11.30  
3rd pressure hPa : 130  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version

E10

Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm3/ : 180.0...186.0  
1000 s: (177.0...189.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 121.0...123.0  
1000 s: (118.0...126.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12, cam angle  
after start of delivery cyl. 1.

## Note remarks

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

```
1st version
Speed          rpm   : 1050
Aneroid pressure h: 750
```

Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1105...1115  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 17...25

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

#### CONSTANT REGULATION

Speed rpm : 290...410

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...10.00  
2nd pressure hPa : 170  
Rack travel in m: 11.10...11.30  
3rd pressure hPa : 130  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 183.0...189.0  
1000 s: (180.0...192.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

Start-of-delivery mark 11.5, cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 1  
 Edition : 28.09.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 722  
 Injection pump  
 Pump designation : PES6P120A720RS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1100P2A534  
 Governor no. : 0 421 833 275

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 HF-050

1st version kW : 194.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X3.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.6...15.8

100 s: (15.4...16.1)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 4.8...5.0  
 Del.quantity cm3/ : 1.7...2.2  
 100 s: (1.5...2.5)

Spread cm3 : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 156.5...158.5

1000 : (154.0...161.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.80...13.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : 605  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 780  
Rack travel in m: 12.10...12.50  
3rd pressure hPa : 1200  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 174.5...179.5  
1000 s: (172.0...182.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 117.5...121.5  
1000 s: (114.5...124.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE32035  
Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y  
Edition : 28.09.89  
Replaces : 7.4.89  
Test oil : ISO-4113  
Combination no. : 0 402 076 723  
Injection pump  
Pump designation : PES6P120A720RS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...1100P2A534-  
1  
Governor no. : 0 421 833 276

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 AF-050

1st version kW : 180.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 4.8...5.0  
Del.quantity cm3/ : 1.7...2.2  
100 s: (1.5...2.5)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del.quantity : 150.0...152.0  
1000 : (147.5...154.5)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

#### Testing:

1st rack travel in: 10.80  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 700  
Rack travel in m: 12.60...12.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 720  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 895  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 173.5...178.5  
1000 s: (171.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (117.0...127.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 b  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 727  
 Injection pump  
 Pump designation : PES6P120A72ORS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1100P2A534-  
 2  
 Governor no. : 0 421 833 290

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 160.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X3.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.4...13.6  
 100 s: (13.1...13.8)

Spread cm3 : 0.4  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 4.8...5.0  
 Del.quantity cm3/ : 1.7...2.2  
 100 s: (1.5...2.5)  
 Spread cm3 : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 900  
 Del.quantity : 134.0...136.0  
 1000 : (131.5...138.5)  
 Spread cm3 : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

### Testing:

1st rack travel in: 10.10  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 540...600

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 700  
Rack travel in m: 12.40...12.60

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.70

### Measurement

Speed 1/min : 500

1st pressure hPa : 470  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 605  
Rack travel in m: 11.80...12.20  
3rd pressure hPa : 900  
Rack travel in m: 12.40...12.60

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 165.5...170.5  
1000 s: (163.0...173.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (119.0...129.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1145...1155

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

### Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 c  
Edition : 28.09.89  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 0 402 076 728

Injection pump  
Pump designation : PES6P120A720RS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV425...1050P2A489-  
2  
Governor no. : 0 421 833 291

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 HRWD1

1st version kW : 175.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
(3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 5.5...5.7  
Del.quantity cm<sup>3</sup>/ : 3.1...3.6  
100 s: (2.9...3.9)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1200  
Del.quantity : 160.0...162.0  
1000 : (157.5...164.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

### Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1170  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 610...670

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 13.40...13.60

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.40...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 725  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 815  
Rack travel in m: 12.90...13.30

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 191.0...196.0  
1000 s: (188.5...198.5)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 157.0...161.0  
1000 s: (154.0...164.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 31.5...36.5  
1000 s: (29.0...39.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

### Remarks:

: JOHN DEERE # RE32888

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 g  
 Edition : 28.09.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 730  
 Injection pump  
 Pump designation : PES6P110A720RS3217  
 EP type number : 0 412 016 724  
 Governor  
 Governor design. : RSV550...1050P2A534-  
 3  
 Governor no. : 0 421 833 304

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6619AT07

1st version kW : 201.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 18.6...18.8

100 s: (18.3...19.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 550.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 3.1...3.6

100 s: (2.9...3.9)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 186.0...188.0

1000 : (183.5...190.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.70

Speed rpm : 1095...1105

2nd rack travel in: 4.00  
Speed rpm : 1165...1175  
4th rack travel in: 1275  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 550  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 550  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 680...740

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 700  
Rack travel in m: 12.50...12.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.50...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 425  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 675  
Rack travel in m: 12.00...12.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 201.5...206.5  
1000 s: (199.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 158.0...162.0  
1000 s: (155.0...165.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 550  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 31.5...36.5  
1000 s: (29.0...39.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE36078

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 g1  
 Edition : 28.09.89  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 402 076 731

Injection pump  
 Pump designation : PES6P110A72ORS3217  
 EP type number : 0 412 016 724  
 Governor  
 Governor design. : RSV400...1050P2A534-  
 4  
 Governor no. : 0 421 833 305

Customer spec. information  
 Customer : JOHN DEERE

Engine : 6101 H

1st version kW : 224.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 21.2...21.4  
 100 s: (20.9...21.6)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.5...5.7  
 Del.quantity cm<sup>3</sup>/ : 2.6...3.1  
 100 s: (2.3...3.3)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 1200  
 Del.quantity : 212.0...214.0  
 1000 : (209.5...216.5)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:  
 1st rack travel in: 11.90  
 Speed rpm : 1090...1100

2nd rack travel in: 4.00  
Speed rpm : 1165...1175  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 700  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.70...13.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 325  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 640  
Rack travel in m: 12.90...13.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm3/ : 228.0...233.0  
1000 s: (225.5...235.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 160.0...164.0  
1000 s: (157.0...167.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...185.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 26.0...31.0  
1000 s: (23.5...33.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 g  
Edition : 28.09.89  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 0 402 076 733

Injection pump  
Pump designation : PES6P110A720RS3224  
EP type number : 0 412 016 726  
Governor  
Governor design. : RSV475...1050P2A534-  
5  
Governor no. : 0 421 833 313

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 AT 001

1st version kW : 170.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.35...3.45  
: (3.30...3.50)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.6...16.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 475.0  
Rack travel in mm : 6.0...6.2  
Del. quantity cm<sup>3</sup>/ : 1.0...1.4  
100 s: (0.8...1.7)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 158.0...160.0

1000 : (156.0...162.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

### Testing:

1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1145  
3rd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 5.6

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 620...680

Aneroid/Altitude  
Compensator Test

### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.10...11.30

2nd pressure hPa : 335

Rack travel in m: 12.80...12.90

3rd pressure hPa : 185

Rack travel in m: 11.50...11.90

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (117.0...127.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 475  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 10.5...14.5  
1000 s: (8.0...17.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

### Remarks:

: JOHN DEERD # RE39856

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MTU 47,5 d  
Edition : 8.1.90  
Replaces : 3.84  
Test oil : ISO-4113  
  
Combination no. : 0 402 430 006  
  
Injection pump  
Pump designation : PE12ZW160/12ORS1015/  
11  
EP type number : 0 412 460 001  
Governor  
Governor design. : RQUV300...900ZWA51R  
Governor no. : 0 422 409 030

Customer-spec. information  
Customer : MTU

Engine : MT 12 V 396

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 40...45

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 027

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.00X1500

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60  
: (2.45...2.65)  
Rack travel in mm : 12.00  
Firing order : 12-9-4-5-8-11-2-3-10  
-7-6-1

Phasing : 0-15-60-75-120-135-  
180-240-255-300-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 600  
Rack travel in mm : 18.00  
Del.quantity cm<sup>3</sup>/ : 51.3...52.3  
100 s : (51.0...52.6)  
Spread cm<sup>3</sup> : 1.6  
100 s : (2.4)

2nd speed rpm : 600  
Rack travel in mm : 9.00  
Del.quantity cm<sup>3</sup>/ : 14.0...16.0  
100 s : (13.5...16.5)  
Spread cm<sup>3</sup> : 1.2  
100 s : (1.8)  
3rd speed rpm : 300  
Rack travel in mm : 9.00  
Del.quantity cm<sup>3</sup>/ : 7.2...9.2  
100 s : (6.7...9.7)  
Spread cm<sup>3</sup> : 1.1  
100 s : (1.6)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 900  
Rack travel in mm : 18.00...18.10

## RATED SPEED

1st version  
Control lever  
position degrees: 75...83

Testing:  
1st rack travel in: 17.00  
Speed rpm : 905...925  
2nd rack travel in: 4.00  
Speed rpm : 1000...1050  
4th rack travel in: 1100  
Speed rpm : 0.00...2.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 300  
Rack travel in mm : 8.00

Control lever  
position degrees: 18...24

#### LOW IDLE 1

##### Testing:

Speed rpm : 200  
Minimum rack travel: 10.80  
Speed rpm : 400  
Rack travel in mm : 3.90...5.00  
Rack travel in mm : -  
Speed rpm : 485...590

#### LOW IDLE 2

Control lever  
position degrees: 24...30  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 8.00

##### Testing:

Speed rpm : 200  
Rack travel in mm : 14.3...17.2  
Speed rpm : 300  
Rack travel in mm : 10.3...11.8  
Speed rpm : 500  
Rack travel in mm : 2.5...3.7  
Speed rpm : 720  
Rack travel in mm : -

##### Remarks:

See VDT-W-400/002

Set idle stop at 300 min -1 to a  
control-rod travel of 8.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BA0 31,8 c1  
 Edition : 02.01.90  
 Replaces : 6.85  
 Test oil : ISO-4113  
 Combination no. : 0 402 630 800  
 Injection pump  
 Pump designation : PE12P120A120RS7106  
 EP type number : 0 412 620 800  
 Governor  
 Governor design. : RQV400...750PA731  
 Governor no. : 0 421 813 464

Customer-spec. information  
 Customer : BAUDOUIN

Engine : V12P15-2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.80...13.90

Del.quantity cm<sup>3</sup>/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 3.8...4.2

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 419.0...421.0

1000 : (416.0...424.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

#### Testing:

1st rack travel in: 12.80

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 776...789

4th rack travel in: 900

Speed rpm : 0.00...1.00

## LOW IDLE 1

### Control Lever

position degrees: 4...12

#### Testing:

Speed rpm : 100

Minimum rack travel: 6.10

Speed rpm : 400

Rack travel in mm : 4.50...4.70

START CUT-OUT

Speed            1/min : 340 (360)

Remarks:                    :



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 14,9 a  
Edition : 15.12.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 630 802  
Injection pump  
Pump designation : PE12P120A120RS7192  
EP type number : 0 412 620 818  
Governor  
Governor design. : RQV325...1500PA930  
Governor no. : 0 421 813 804

Customer-spec. information  
Customer : BAUDOUIN

Engine : 12 F 120 SR

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 5- 3- 8-  
11- 4- 2- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.4...4.6

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.60...1.00

2nd speed rpm : 700

travel mm : 2.90...3.30

3rd speed rpm : 1500

travel mm : 8.10...8.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1700

Rack travel in mm : 4.50...7.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Aneroid pressure h: 900

Del.quantity : 169.0...171.0

1000 : (166.0...174.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1630...1660  
4th rack travel in: 1750  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION  
Speed rpm : 320...460

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.50...11.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 400  
Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1540...1550

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 31,8 c2  
 Edition : 05.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 630 803  
 Injection pump  
 Pump designation : PE12P120A12ORS7106  
 EP type number : 0 412 620 800  
 Governor  
 Governor design. : RQV400...750PA935  
 Governor no. : 0 421 813 819

Customer spec. information  
 Customer : BAUDOUIN

Engine : V12P15-2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0  
 Rack travel in mm : 4.4...4.8  
 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700  
 Del.quantity : 419.0...421.0  
 1000 : (416.0...424.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

### 1st version

#### Testing:

1st rack travel in: 13.70  
 Speed rpm : 750...755  
 2nd rack travel in: 4.00  
 Speed rpm : 781...794  
 4th rack travel in: 900  
 Speed rpm : 0.00...1.00

## LOW IDLE 1

Control Lever  
 position degrees: 4...12

#### Testing:

Speed rpm : 100

Minimum rack trave: 6.10  
Speed rpm : 400  
Rack travel in mm : 4.50...4.70

START CUT-OUT

Speed 1/min : 340 (360)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 31,8 e  
 Edition : 12.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 630 804  
 Injection pump  
 Pump designation : PE12P120A12ORS7193  
 EP type number : 0 412 620 820  
 Governor  
 Governor design. : RQV275...1000PA938  
 Governor no. : 0 421 813 822

Customer-spec. information  
 Customer : BAUDOUIN

Engine : V12P15-2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.3...5.7

Del. quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 0.60...1.00

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 700

travel mm : 5.00...5.40

4th speed rpm : 1000

travel mm : 7.60...7.80

5th speed rpm : 1300

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 379.0...381.0  
1000 : (376.0...384.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 12.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 63...71

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 275  
Rack travel in mm : 5.40...5.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.10  
2nd pressure hPa : 400  
Rack travel in m: 13.10...13.20  
Rack travel in m: 12.40...12.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1040...1050

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#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.30...5.70  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (24.0...36.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 12,0 d1  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 638 802  
 Injection pump  
 Pump designation : PE8P120A120LS7127  
 EP type number : 0 412 628 817  
 Governor  
 Governor design. : RQV250..1100PA7E5-1  
 Governor no. : 0 421 813 572

Customer-spec. information  
 Customer : STEYR

Engine : WD 815.66

1st version kW : 270.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 4- 8- 6- 3-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 11.50...11.60  
 Del.quantity cm3/ : 17.4...17.6  
 100 s: (17.1...17.9)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del.quantity cm3/ : 1.5...2.1  
 100 s: (1.2...2.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.20  
 2nd speed rpm : 340  
 travel mm : 1.70...2.10  
 3rd speed rpm : 410  
 travel mm : 2.30...2.70  
 4th speed rpm : 1150  
 travel mm : 8.40...8.60  
 5th speed rpm : 1240  
 travel mm : 9.60...9.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1140  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100

Aneroid pressure h: 900  
Del.quantity : 174.0...176.0  
1000 : (171.0...179.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 250  
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION  
Speed rpm : 250...420

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 700  
Rack travel in m: 11.70...11.90  
3rd speed rpm : 800  
Rack travel in m: 11.60...11.80  
4th speed rpm : 400  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.60

2nd pressure hPa : 700  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 480  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 182.0...190.0  
1000 s: (180.0...192.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 112.0...116.0  
1000 s: (110.0...118.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...260.0  
1000 s: (226.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 16,3 b  
Edition : 02.10.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 638 803  
  
Injection pump  
Pump designation : PE8P120A120RS7141  
EP type number : 0 412 628 823  
Governor  
Governor design. : RQ750PA871  
Governor no. : 0 421 801 404

Customer spec. information  
Customer : PERKINS

Engine : CV8-320 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 6- 5- 4- 8-  
7- 2

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
  
Rack travel in mm : 14.40...14.50  
  
Del.quantity cm<sup>3</sup>/ : 33.3...33.5  
100 s: (33.0...33.8)  
  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 7.5...7.7  
Del.quantity cm<sup>3</sup>/ : 3.6...4.2  
100 s: (3.3...4.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 333.0...335.0  
1000 : (330.0...338.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 77...85

Testing:  
1st rack travel in: 13.40  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...785  
4th rack travel in: 900  
Speed rpm : 0.00...1.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 x 1  
Edition : 06.10.89  
Replaces : 12.12.86  
Test oil : ISO-4113

Combination no. : 0 402 640 805

Injection pump  
Pump designation : PE12P120A320LS7807  
EP type number : 0 412 620 806  
Governor  
Governor design. : RQV350...1050PA842-1  
Governor no. : 0 421 813 588

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 478.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
                  4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
                  180-225-240-285-300-  
                  345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.70...14.90

Del.quantity cm<sup>3</sup>/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.40...1.60

2nd speed rpm : 800  
travel mm : 4.70...5.10

3rd speed rpm : 1100  
travel mm : 7.60...8.20

4th speed rpm : 1175  
travel mm : 9.20...9.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

#### 1st version

Speed rpm : 650  
Aneroid pressure h : 800  
Del.quantity : 217.0...219.0  
1000 : (214.0...222.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 62...70

##### Testing:

1st rack travel in: 14.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

##### Testing:

Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 400...600

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.00...15.20  
2nd speed rpm : 975  
Rack travel in m: 15.30...15.50  
3rd speed rpm : 900  
Rack travel in m: 15.70...15.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.30...11.50

2nd pressure hPa : 600  
Rack travel in m: 13.80...14.00  
3rd pressure hPa : 950  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 1150  
Rack travel in m: 15.60...15.80  
5th pressure hPa : -  
Rack travel in m: 10.50...10.70

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1300  
Speed rpm : 1050  
Del.quantity cm3/ : 226.0...229.0  
1000 s: (223.0...232.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 850  
Del.quantity cm3/ : 244.0...248.0  
1000 s: (241.0...251.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 1050  
Del.quantity cm3/ : 164.0...167.0 \*  
1000 s: (161.0...170.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 14.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.90  
Del.quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 a3  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 808  
 Injection pump  
 Pump designation : PE12P120A520LS7812  
 EP type number : 0 412 620 807  
 Governor  
 Governor design. : RQV250...1150PA860  
 Governor no. : 0 421 813 626

Customer-spec. information  
 Customer : MAN

Engine : D2842LXE

1st version kW : 662.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
 : (4.85...5.05)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 12.20...12.30  
 Del.quantity cm3/ : 24.5...24.7  
 100 s: (24.2...25.0)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 500.0  
 Rack travel in mm : 8.7...8.9  
 Del.quantity cm3/ : 14.1...14.7  
 100 s: (13.8...15.0)  
 Spread cm3 : 0.8  
 100 s: (1.2)  
 3rd speed rpm : 250  
 Rack travel in mm : 7.30...7.50  
 Del.quantity cm3/ : 5.2...6.0 \*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 2.00...2.50  
 2nd speed rpm : 900  
 travel mm : 6.70...6.90  
 3rd speed rpm : 1150  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version



Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 245.0...247.0  
1000 : (242.0...250.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: ?

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1190...1200  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: ?

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 12.20...12.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 270  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 790  
Rack travel in m: 11.30...11.70

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 500  
Rack travel in mm : 7.20...7.40  
Del.quantity cm<sup>3</sup>/ : 0 \*\*  
1000 s: (-)

2nd version  
Speed rpm : 500  
Rack travel in mm : 8.00...8.20  
Del.quantity cm<sup>3</sup>/ : 10.0...130.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 52.0...60.0 \*  
1000 s: (-)

#### Remarks:

\* applies to cylinders 4, 5, 6, 8, 10  
and 12  
\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

#### APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 a  
 Edition : 15.08.89  
 Replaces : 10.2.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 811  
 Injection pump  
 Pump designation : PE12P120A520LS7812  
 EP type number : 0 412 620 807  
 Governor  
 Governor design. : RQV250...1150PA860-1  
 Governor no. : 0 421 813 692

Customer-spec. information  
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
 : (4.85...5.05)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 13.20...13.30  
 Del.quantity cm3/ : 28.9...29.1  
 100 s: (28.6...29.4)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.30...7.50  
 Del.quantity cm3/ : 5.2...6.0 \*  
 100 s: (-)  
 3rd speed rpm : 500  
 Rack travel in mm : < 7.50  
 Del.quantity cm3/ : 0 \*\*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 2.00...2.40  
 2nd speed rpm : 900  
 travel mm : 6.70...7.10  
 3rd speed rpm : 1150  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 1300

Del.quantity : 289.0...291.0  
1000 : (286.0...294.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 63...71

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 405...465

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 270  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 790  
Rack travel in m: 11.40...11.80

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -

F19

Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm3/ : 0 \*\*  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 500  
Rack travel in mm : < 8.00  
Del.quantity cm3/ : < 50.0  
1000 s: (-)

#### 2nd version

Speed rpm : 500  
Rack travel in mm : 8.60...8.80  
Del.quantity cm3/ : 125.0

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 52.0...60.0 \*  
1000 s: (-)

#### Remarks:

: MAN-NR. 2-7858

\* applies to cylinders 4, 5, 6, 8, 10  
and 12  
\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

#### APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 a1  
 Edition : 01.09.89  
 Replaces : 7.2.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 813  
 Injection pump  
 Pump designation : PE12P120A520LS7812  
 EP type number : 0 412 620 807  
 Governor  
 Governor design. : RQV250...1150PA902-1  
 Governor no. : 0 421 813 728

Customer-spec. information  
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness : 6.00X1.50X1000  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
 : (4.85...5.05)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-

Phasing : 345  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.30...7.50  
 Del.quantity cm<sup>3</sup>/ : 5.2...6.0 \*  
 100 s: (-)

3rd speed rpm : 500  
 Rack travel in mm : < 7.50  
 Del.quantity cm<sup>3</sup>/ : 0 \*\*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.50  
 2nd speed rpm : 500  
 travel mm : 3.80...4.20  
 3rd speed rpm : 850  
 travel mm : 6.50...6.90  
 4th speed rpm : 1150  
 travel mm : 9.50...9.70  
 5th speed rpm : 1400  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

# 1st version

Speed rpm : 1150  
Aneroid pressure h: 1600  
Del.quantity : 289.0...291.0  
1000 : (286.0...294.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1315  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 500  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 1150  
Rack travel in m: 11.80...12.20

## START CUT-OUT

Speed 1/min : 170 (190)

## FUEL DELIVERY CHARACTERISTICS

F21

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm3/ : 0 \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

## HIGH IDLE

### 1st version

Speed rpm : 500  
Rack travel in mm : < 8.00  
Del.quantity cm3/ : < 50.0 \*\*  
1000 s: (-)

### 2nd version

Speed rpm : 500  
Rack travel in mm : 8.60...8.80  
Del.quantity cm3/ : 125.0  
1000 s: (-)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 52.0...60.0 \*  
1000 s: (-)

## Remarks:

: MAN-NR. 2-7960

\* applies to cylinders 4, 5, 6, 8, 10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 a2  
 Edition : 01.09.89  
 Replaces : 7.2.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 814  
 Injection pump  
 Pump designation : PE12P120A520LS7812  
 EP type number : 0 412 620 807  
 Governor  
 Governor design. : RQV250...1150PA902  
 Governor no. : 0 421 813 720

Customer spec. information  
 Customer : MAN

Engine : D2842LXE

1st version kW : 662.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
 : (4.85...5.05)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500.0  
 Rack travel in mm : 8.7...8.9  
 Del.quantity cm3/ : 14.1...14.7  
 100 s: (13.8...15.0)

Spread cm3 : 0.8  
 100 s: (1.2)

3rd speed rpm : 250  
 Rack travel in mm : 7.30...7.50  
 Del.quantity cm3/ : 5.2...6.0 \*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.50

2nd speed rpm : 500  
 travel mm : 3.80...4.20

3rd speed rpm : 850  
 travel mm : 6.50...6.90

4th speed rpm : 1150  
 travel mm : 9.50...9.70

5th speed rpm : 1400  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 57...65

### Testing:

1st rack travel in: 11.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1265...1295  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 18...26

### Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 12.20...12.30

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 270  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 790  
Rack travel in m: 11.30...11.70

## START CUT-OUT

Speed 1/min : 200 (220)

F24

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 0 \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

## HIGH IDLE

### 1st version

Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : 0 \*\*  
1000 s: (-)

### 2nd version

Speed rpm : 500  
Rack travel in mm : < 8.00  
Del.quantity cm<sup>3</sup>/ : < 50.0 \*\*  
1000 s: (-)

### 3rd version

Speed rpm : 500  
Rack travel in mm : 8.60...8.80  
Del.quantity cm<sup>3</sup>/ : 125.0  
1000 s: (-)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 52.0...60.0 \*  
1000 s: (-)

## Remarks:

: MAN-NR. 7959



\* applies to cylinders 4, 5, 6, 8 ,10  
and 12  
\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

#### APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 b  
 Edition : 02.01.90  
 Replaces : 16.6.89  
 Test oil : ISO-4113

Combination no. : 0 402 640 815

Injection pump  
 Pump designation : PE12P120A520LS7824  
 EP type number : 0 412 620 816  
 Governor  
 Governor design. : RQV250...1150PA902-2  
 Governor no. : 0 421 813 760

Customer-spec. information  
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-

Phasing : 345  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm<sup>3</sup>/ : 30.1...30.3

100 s: (29.8...30.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 500  
 Rack travel in mm : 9.10...9.30  
 Del.quantity cm<sup>3</sup>/ : 14.0...15.1  
 100 s: (14.6...15.4)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

3rd speed rpm : 250  
 Rack travel in mm : 7.20...7.40  
 Del.quantity cm<sup>3</sup>/ : 5.2...6.0 \*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 3.10...3.70  
 3rd speed rpm : 750  
 travel mm : 5.80...6.20  
 4th speed rpm : 1150  
 travel mm : 9.50...9.70  
 5th speed rpm : 1400  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
 Aneroid pressure h: 1300  
 Del.quantity : 301.0...303.0  
 1000 : (298.0...306.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
 position degrees: 58...66

Testing:

1st rack travel in: 12.60  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1290...1320  
 4th rack travel in: 1400  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
 position degrees: 16...24

Testing:

Speed rpm : 100  
 Minimum rack trave: 8.90  
 Speed rpm : 250  
 Rack travel in mm : 7.30...7.50  
 Rack travel in mm : 2.00  
 Speed rpm : 430...490

Aneroid/Altitude  
 Compensator Test

1st version

Setting  
 Speed rpm : 500  
 Pressure hPa : 1300  
 Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -  
 Rack travel in m: 9.10...9.30  
 2nd pressure hPa : 100  
 Rack travel in m: 9.50...9.60  
 3rd pressure hPa : 470  
 Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 170 (190)

F27

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 149.0...151.0  
 1000 s: (146.0...154.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60  
 Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 100.0...120.0 \*  
 1000 s: (-)

Speed rpm : 100  
 Del.quantity cm3/ : 0 \*\*  
 1000 s: (-)  
 Rack travel in mm : 17.50

## HIGH IDLE

1st version

Speed rpm : 500  
 Rack travel in mm : < 7.00  
 Del.quantity cm3/ : 0 \*\*  
 1000 s: (-)

2nd version

Speed rpm : 500  
 Rack travel in mm : < 7.50  
 Del.quantity cm3/ : < 50.0  
 1000 s: (-)

3rd version

Speed rpm : 500  
 Rack travel in mm : 8.40...8.60  
 Del.quantity cm3/ : 125.0  
 1000 s: (-)

## LOW IDLE

Speed rpm : 250  
 Rack travel in mm : 7.20...7.40  
 Del.quantity cm3/ : 52.0...60.0  
 1000 s: (-)

Remarks:

: MAN-NR. 2-7960

\* applies to cylinders 4, 5, 6, 8 ,10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 c  
Edition : 01.09.89  
Replaces : 7.7.89  
Test oil : ISO-4113  
  
Combination no. : 0 402 640 817  
  
Injection pump  
Pump designation : PE12P120A520LS7826  
EP type number : 0 412 620 817  
Governor  
Governor design. : RGV350...1150PA870-4  
Governor no. : 0 421 813 717

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
                  : (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
                  4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
                  180-225-240-285-300-  
                  345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 31.0...31.2

100 s: (30.7...31.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0  
Rack travel in mm : 5.3...5.9  
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.90...2.40  
2nd speed rpm : 500  
travel mm : 3.00...3.50  
3rd speed rpm : 800  
travel mm : 4.30...4.80  
4th speed rpm : 1200  
travel mm : 8.30...8.80  
5th speed rpm : 1250  
travel mm : 9.30...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1275  
Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 310.0...312.0  
1000 : (307.0...315.0)  
Spread cm3 : 6.00  
1000 : (10.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 60...68

### Testing:

1st rack travel in: 14.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 10...18

### Testing:

Speed rpm : 250  
Minimum rack trave: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.30...5.90

## CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.00...8.30

## Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 1100  
Rack travel in m: 13.60...13.90

## START CUT-OUT

Speed 1/min : 310 (330)

## FUEL DELIVERY CHARACTERISTICS

G02

## 1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm3/ : 301.0...311.0  
1000 s: (298.0...314.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)  
Spread cm3 : 10.00  
1000 s: (15.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 b  
 Edition : 02.10.89  
 Replaces : 31.3.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 836  
 Injection pump  
 Pump designation : PE6P120A72ORS7126  
 EP type number : 0 412 626 815  
 Governor  
 Governor design. : RQV200...1000PA725-1  
 Governor no. : 0 421 813 552

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DSC11 18

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 14.10...14.20  
 Del.quantity cm3/ : 23.4...23.6  
 100 s: (23.1...23.9)  
 Spread cm3 : 0.6  
 100 s: (0.9)

2nd speed rpm : 225.0  
 Rack travel in mm : 4.5...4.9  
 Del.quantity cm3/ : 1.5...1.9  
 100 s: (-)  
 Spread cm3 : 0.3  
 100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.20...1.60  
 2nd speed rpm : 350  
 travel mm : 2.40...3.00  
 3rd speed rpm : 650  
 travel mm : 4.40...5.00  
 4th speed rpm : 1045  
 travel mm : 8.40...8.60  
 5th speed rpm : 1160  
 travel mm : 9.90...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1040  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900  
 Del.quantity : 234.0...236.0  
 1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 13.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 225  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 500

#### 1st pressure hPa : -

Rack travel in m: 10.50...10.90  
2nd pressure hPa : 510  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 250  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 223.0...231.0  
1000 s: (221.0...233.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 150.0...154.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 275.0...325.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.50...4.70

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO  
diaphragm.

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on 1988-09-21

Start of delivery - engine: 13, before  
TDC

Firing sequence of engine:  
1-5-3-6-2-4.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 16,2 b1  
 Edition : 02.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 857A  
 Injection pump  
 Pump designation : PE6P130A720RS7150  
 EP type number : 0 412 636 808  
 Governor  
 Governor design. : RQV250...900PA881  
 Governor no. : 0 421 813 676

Customer-spec. information  
 Customer : PENTA

Engine : TAMD 162 A (PD)

1st version kW : 450.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 38.3...38.5

100 s: (37.9...38.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.7...3.9

Del.quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.90...1.30

2nd speed rpm : 350  
 travel mm : 2.00...2.60

3rd speed rpm : 700  
 travel mm : 3.90...4.50

4th speed rpm : 1075  
 travel mm : 8.10...8.30

5th speed rpm : 1160  
 travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 383.0...385.0  
1000 : (379.0...389.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.70...3.90

CONSTANT REGULATION  
Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 340  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 970  
Rack travel in m: 12.20...12.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1070...1080

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.70...3.90  
Del.quantity cm3/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,1 f  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 884  
Injection pump  
Pump designation : PE6P130A320RS7113  
EP type number : 0 412 636 803  
Governor  
Governor design. : RQ750PA926  
Governor no. : 0 421 801 486

Customer spec. information  
Customer : VOLVO-TRUCK

Engine : TID121 LG

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 067  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

G07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 12.90...13.00  
Del.quantity cm3/ : 30.0...30.3  
100 s: (29.7...30.6)  
Spread cm3 : 0.5  
100 s: (0.9)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 300.0...303.0  
1000 : (297.0...306.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 19...27

Testing:  
1st rack travel in: 11.90  
Speed rpm : 748...753  
2nd rack travel in: 4.00  
Speed rpm : 777...792  
4th rack travel in: 840  
Speed rpm : 0.00...1.00

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 748...753

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 310.0...350.0  
1000 s: (306.0...354.0)

HIGH IDLE

1st version

Speed rpm : 782  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

APPLICATION

Generator

## Note remarks

Combination no. : 0 402 646 888

Customer-spec. information  
Customer : DAIMLER-BENZ

1st version kW : 243.0  
Rated speed : 2100

Test oil  
inlet temp., C . : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                   : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order      : 6- 3- 5- 2- 4- 1
```

Phasing : 0-60-120-180-240-300  
-360

Tolerance  $\pm$   $\therefore 0.50$  (0.75)

Time to cyl. no. : 6

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm<sup>3</sup>/ : 22.4...22.6  
100 s: (22.1...22.9)

$$\frac{\text{Spread cm}^3}{100 \text{ s}} = \frac{0.5}{(0.9)}$$

```
2nd speed      rpm : 350.0
Rack travel in mm : 5.1...5.7
Del.quantity cm3/ : 1.6...2.2
                100 s: (1.3...2.5)
Spread         cm3 : 0.6
                100 s: (1.0)
```

(B) Setting of injection pump  
with governor

1st speed	rpm	: 350
travel mm		: 1.40...1.60
2nd speed	rpm	: 800
travel mm		: 3.90...4.30
3rd speed	rpm	: 1100
travel mm		: 6.80...7.20
4th speed	rpm	: 1200
travel mm		: 8.50...9.00

Control-lever position  
Degree: -1

Speed rpm : 1185  
 Rack travel in mm : 16.50...18.00

1st version  
Speed            rpm    : 600

Aneroid pressure h: 1000  
Del. quantity : 224.0...226.0  
1000 : (221.0...229.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.10...5.70

#### CONSTANT REGULATION

Speed rpm : 350...600

#### TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 1000  
Rack travel in m: 15.30...15.50  
4th speed rpm : 985  
Rack travel in m: 15.50...15.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.30...14.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 600  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1250

G10

Rack travel in m: 14.50...14.70  
4th pressure hPa : 1350  
Rack travel in m: 14.90...15.10  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del. quantity cm3/ : 245.0...249.0  
1000 s: (242.0...252.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 750  
Del. quantity cm3/ : 253.0...257.0  
1000 s: (250.0...260.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 k  
Edition : 03.11.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 893

Injection pump  
Pump designation : PE6P120A320RS7194  
EP type number : 0 412 626 834  
Governor  
Governor design. : RQ250/1000PA936  
Governor no. : 0 421 801 507

Customer spec. information  
Customer : DAF

Engine : WS 268

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 7.0...7.4  
Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 550  
Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del. quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 550  
Rack travel in mm : 15.8

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00

Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 1000  
Rack travel in m: 12.60...12.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.30...13.40

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 650  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 440  
Rack travel in m: 11.30...11.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 174.0...176.0  
1000 s: (171.0...179.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1035...1050

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.10...6.30

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 k1  
Edition : 05.01.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 894  
Injection pump  
Pump designation : PE6P120A320RS7194  
EP type number : 0 412 626 834  
Governor  
Governor design. : RQ250/1000PA936-1  
Governor no. : 0 421 801 508

Customer spec. information  
Customer : DAF

Engine : WS 295

1st version kW : 295.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.0...7.4

Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)

Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0  
1000 : (242.0...250.0)

Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.20

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 1000  
Rack travel in m: 13.40...13.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 460  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 310  
Rack travel in m: 11.50...11.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 171.0...173.0  
1000 s: (168.0...176.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1035...1050

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.10...6.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 k2  
 Edition : 13.12.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 895  
 Injection pump  
 Pump designation : PE6P120A32ORS7194  
 EP type number : 0 412 626 834  
 Governor  
 Governor design. : RGV275...1000PA939  
 Governor no. : 0 421 813 829

Customer-spec. information  
 Customer : DAF

Engine : WS 268

1st version kW : 268.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 12.70...12.80  
 Del.quantity cm3/ : 22.9...23.1  
 100 s: (22.6...23.4)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.0...7.4  
 Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.10...1.50  
 2nd speed rpm : 400  
 travel mm : 2.40...3.20  
 3rd speed rpm : 800  
 travel mm : 5.20...5.60  
 4th speed rpm : 1000  
 travel mm : 7.30...7.50  
 5th speed rpm : 1300  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1060  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000  
 Del.quantity : 229.0...231.0  
 1000 : (226.0...234.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 250  
Rack travel in mm : 6.10...6.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 480  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 350  
Rack travel in m: 11.30...11.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 174.0...176.0  
1000 s: (171.0...179.0)

#### BREAKAWAY

#### 1st version

G16

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.10...6.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 j2  
 Edition : 12.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 895  
 Injection pump  
 Pump designation : PE6P120A320RS7202  
 EP type number : 0 412 626 835  
 Governor  
 Governor design. : RQV250...1000PA939  
 Governor no. : 0 421 813 829

Customer-spec. information  
 Customer : DAF

Engine : WS 268

1st version kW : 268.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 11.40...11.50  
 Del.quantity cm3/ : 21.5...21.7  
 100 s: (21.2...22.0)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.0...4.4  
 Del.quantity cm3/ : 2.3...2.9  
 100 s: (2.0...3.2)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.70...1.10  
 2nd speed rpm : 400  
 travel mm : 2.40...3.20  
 3rd speed rpm : 800  
 travel mm : 5.20...5.60  
 4th speed rpm : 1000  
 travel mm : 7.30...7.50  
 5th speed rpm : 1300  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1060  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000

Del.quantity : 215.0...217.0  
1000 : (212.0...220.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 10.40  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 250  
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION  
Speed rpm : 270...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 11.40...11.50

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 440  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 290  
Rack travel in m: 9.60...9.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.00...4.40  
Del.quantity cm3/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 j1  
 Edition : 15.12.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 895  
 Injection pump  
 Pump designation : PE6P120A320RS7202  
 EP type number : 0 412 626 835  
 Governor  
 Governor design. : RQV275...1000PA939  
 Governor no. : 0 421 813 829

Customer-spec. information  
 Customer : DAF

Engine : WS 268

1st version kW : 268.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.4

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.10...1.50

2nd speed rpm : 400

travel mm : 2.40...3.20

3rd speed rpm : 800

travel mm : 5.20...5.60

4th speed rpm : 1000

travel mm : 7.30...7.50

5th speed rpm : 1300

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 250  
Rack travel in mm : 4.10...4.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 440  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 290  
Rack travel in m: 9.60...9.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 148.0...150.0  
1000 s: (145.0...153.0)

#### BREAKAWAY

1st version

G20

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.00...4.40  
Del.quantity cm<sup>3</sup>/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:



## Note remarks

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Speed rpm : 600  
Rack travel in mm : 20.0

### Testing:

1st rack travel in: 13.60  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

### TORQUE CONTROL

Dimension a mm : 0.30  
2nd speed rpm : 950  
Rack travel in m: 14.60...14.80  
3rd speed rpm : 700  
Rack travel in m: 14.60...14.80

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.50...13.70

### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 550  
Rack travel in m: 12.70...12.90  
3rd pressure hPa : 1150  
Rack travel in m: 13.80...14.00  
4th pressure hPa : 1250  
Rack travel in m: 14.30...14.50  
5th pressure hPa : -  
Rack travel in m: 8.90...9.20

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm3/ : 238.0...240.0  
1000 s: (235.0...243.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm3/ : 236.0...239.0  
1000 s: (233.0...242.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 990...1005

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 14,2 b  
 Edition : 24.11.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 804  
 Injection pump  
 Pump designation : PE8P120A920/4LS7003  
 EP type number : 0 412 628 801  
 Governor  
 Governor design. : RQ900PA528  
 Governor no. : 0 421 801 127

Customer spec. information  
 Customer : SAAB-SCANIA

Engine : DS 14 41, DSI 14 42

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-  
 6- 8

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 12.80...12.90  
 Del.quantity cm3/ : 18.6...18.8  
 100 s: (18.3...19.1)  
 Spread cm3 : 0.6  
 100 s: (0.9)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Del.quantity : 186.0...188.0  
 1000 : (183.0...191.0)  
 Spread cm3 : 6.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.5

Testing:  
 1st rack travel in: 11.80  
 Speed rpm : 900...905  
 2nd rack travel in: 4.00  
 Speed rpm : 941...955  
 4th rack travel in: 1000  
 Speed rpm : 0.00...1.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 900...955

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

#### HIGH IDLE

1st version

Rack travel in mm : 4.90...5.10

Spread cm3 : 4.00

1000 s: (7.00)

Remarks:

:

#### ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on 1986-06-04

Start of delivery - engine:

DS 14 - 18, before TDC

DSI 14 - 17, before TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 4  
Edition : 03.11.89  
Replaces : 28.11.88  
Test oil : ISO-4113

Combination no. : 0 402 648 817

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQ300/1050PA762-5  
Governor no. : 0 421 801 399

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.40...13.70  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 180.0...183.0  
1000 s: (177.0...186.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 5  
Edition : 03.11.89  
Replaces : 29.3.89  
Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQV300..1050PA797-3  
Governor no. : 0 421 813 627

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.0...6.4  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40  
2nd speed rpm : 600  
travel mm : 4.90...5.10  
3rd speed rpm : 1075  
travel mm : 7.40...7.60  
4th speed rpm : 1100  
travel mm : 8.00...8.20  
5th speed rpm : 1150  
travel mm : 9.00...9.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 500  
Aneroid pressure h: 650  
Del.quantity : 201.0...203.0  
1000 : (198.0...206.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...62

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 1.40  
2nd speed rpm : 1050  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.30...14.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60

G28

2nd pressure hPa : 400  
Rack travel in m: 13.40...13.70  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.30...11.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 180.0...183.0  
1000 s: (177.0...186.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

:

\* Increase in control-rod travel with



respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 e  
Edition : 15.08.89  
Replaces : 2.11.87  
Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350..1050PA842-3  
Governor no. : 0 421 813 622

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del. quantity cm<sup>3</sup>/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.90...2.10

2nd speed rpm : 700

travel mm : 4.00...4.40

3rd speed rpm : 1100

travel mm : 6.80...7.20

4th speed rpm : 1200

travel mm : 8.30...8.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 750  
Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 14.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION  
Speed rpm : 350...550

TORQUE CONTROL  
Dimension a mm : 0.20  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 975  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.70

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 900  
Rack travel in m: 14.70...14.80

H03

4th pressure hPa : 1250  
Rack travel in m: 15.20...15.40  
5th pressure hPa : -  
Rack travel in m: 11.60...11.80

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 227.0...230.0  
1000 s: (224.0...233.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 238.0...242.0  
1000 s: (235.0...245.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 156.0...159.0 \*  
1000 s: (153.0...162.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

\* = Set at reduced-delivery stop.

Note remarks

Combination no. : 0 402 648 833

1st version kW : 260.0  
Rated speed : 2100

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

1st version

Speed rpm : 1050  
Aneroid pressure h: 1100  
Del.quantity : 181.0...183.0  
1000 : (178.0...186.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 250  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 350...550

TORQUE CONTROL  
Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 950  
Rack travel in m: 13.50...13.60  
4th speed rpm : 830  
Rack travel in m: 14.30...14.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 11.20...11.50

Measurement  
Speed 1/min : 600

1st pressure hPa : 420

H05

Rack travel in m: 11.90...12.10  
2nd pressure hPa : 600  
Rack travel in m: 13.60...13.80

#### START CUT-OUT

Speed 1/min : 270 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 152.0...154.0 \*  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 8  
Edition : 07.07.89  
Replaces : 21.8.87  
Test oil : ISO-4113

Combination no. : 0 402 648 841

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQ300/1050PA762-5  
Governor no. : 0 421 801 399

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del.quantity : 203.0...205.0

1000 : (200.0...208.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.40...13.70  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 180.0...183.0  
1000 s: (177.0...186.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 j  
Edition : 02.10.89  
Replaces : 7.2.89  
Test oil : ISO-4113

Combination no. : 0 402 648 844

Injection pump  
Pump designation : PE8P120A320LS7816  
EP type number : 0 412 628 829  
Governor  
Governor design. : RQ300/1050PA717-2  
Governor no. : 0 421 801 439

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 234.0...237.0

1000 : (231.0...240.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600



Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 850  
Rack travel in m: 15.00...15.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1050  
Rack travel in m: 13.70...13.90 \*  
4th pressure hPa : 1350  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm3/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 850  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 k  
Edition : 06.10.89  
Replaces : 16.6.88  
Test oil : ISO-4113

Combination no. : 0 402 648 845

Injection pump  
Pump designation : PE8P120A320LS7816  
EP type number : 0 412 628 829  
Governor  
Governor design. : RQV300..1050PA797-5  
Governor no. : 0 421 813 702

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.9...6.5  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40  
2nd speed rpm : 800  
travel mm : 5.80...6.10  
3rd speed rpm : 1120  
travel mm : 8.20...8.80  
4th speed rpm : 1180  
travel mm : 9.60...10.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 234.0...237.0  
1000 : (231.0...240.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 13.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 1.30  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 800  
Rack travel in m: 14.90...15.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1050  
Rack travel in m: 13.70...13.90 \*

4th pressure hPa : 1350  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 d  
Edition : 07.04.89  
Replaces : 4.11.88  
Test oil : ISO-4113

Combination no. : 0 402 648 850

Injection pump  
Pump designation : PE8P120A52OLS7818  
EP type number : 0 412 628 830  
Governor  
Governor design. : RQV250...1150PA860  
Governor no. : 0 421 813 626

Customer-spec. information  
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70  
: (4.55...4.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

---

Rack travel in mm : 13.50...13.60

---

Del.quantity cm<sup>3</sup>/ : 28.9...29.1

---

100 s: (28.6...29.4)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 500.0  
Rack travel in mm : 8.9...9.1  
Del.quantity cm<sup>3</sup>/ : 14.9...15.1  
100 s: (28.6...29.4)

3rd speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 5.2...6.0 \*  
100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.20

2nd speed rpm : 450  
travel mm : 3.50...4.10

3rd speed rpm : 850  
travel mm : 6.50...6.90

4th speed rpm : 1150  
travel mm : 8.40...8.60

5th speed rpm : 1450  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1150  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Aneroid pressure h: 1600  
Del.quantity : 289.0...291.0  
1000 : (286.0...294.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 12.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 425...485

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1600  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 250  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 900  
Rack travel in m: 11.90...12.20

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 500  
Rack travel in mm : < 7.00  
Del.quantity cm<sup>3</sup>/ : 0 \*\*  
1000 s: (-)

2nd version  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : < 50.0 \*\*  
1000 s: (-)

3rd version  
Speed rpm : 500  
Rack travel in mm : 8.20...8.40  
Del.quantity cm<sup>3</sup>/ : 125.0 \*\*

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 52.0...60.0  
1000 s: (-)

Remarks:  
: MAN-NR. 7927

\* applies to cylinders 2, 3, 4 and 8  
\*\* applies for cylinders 1, 5, 6, and 7

#### APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 e  
Edition : 02.01.90  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 0 402 648 851

Injection pump  
Pump designation : PE8P120A520LS7818  
EP type number : 0 412 628 830  
Governor  
Governor design. : RQV250...1150PA902  
Governor no. : 0 421 813 720

Customer-spec. information  
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 14.10...14.20  
Del.quantity cm3/ : 30.7...30.9  
100 s: (30.4...31.2)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 500.0  
Rack travel in mm : 8.90...9.10  
Del.quantity cm3/ : 14.9...15.1  
100 s: (14.6...15.4)  
3rd speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 5.2...6.0 \*  
100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.40...1.60  
2nd speed rpm : 450  
travel mm : 3.40...4.00  
3rd speed rpm : 850  
travel mm : 6.30...6.90  
4th speed rpm : 1150  
travel mm : 9.40...9.60  
5th speed rpm : 1450  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1210  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 307.0...309.0  
1000 : (304.0...312.0)  
Spread cm3 : 5.00  
1000 : (9.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in: 13.10  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 19...27

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 100  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.20

### START CUT-OUT

Speed 1/min : 200 (220)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 1190...1200

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0  
1000 s: (-)

### HIGH IDLE

#### 1st version

Speed rpm : 500  
Rack travel in mm : < 7.00  
Del.quantity cm3/ : 0 \*\*  
1000 s: (-)

#### 2nd version

Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm3/ : < 50.0 \*\*  
1000 s: (-)

#### 3rd version

Speed rpm : 500  
Rack travel in mm : 8.30...8.50  
Del.quantity cm3/ : 125.0 \*\*

### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 52.0...60.0  
1000 s: (-)

### Remarks:

: MAN-NR. 7944  
\* applies to cylinders 2, 3, 4 and 8  
\*\* applies for cylinders 1, 5, 6, and 7

### APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 e  
 Edition : 13.12.89  
 Replaces : 30.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 854  
 Injection pump  
 Pump designation : PE8P130A920/5LS7822  
 EP type number : 0 412 638 802  
 Governor  
 Governor design. : RQV300...950PA905  
 Governor no. : 0 421 813 723

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8280.42.001

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 40...45

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 688 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20  
 : (5.05...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 23.5...23.8

100 s: (23.1...24.1)

Spread cm3 : -

100 s: (1.2)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.1...6.5  
 Del.quantity cm3/ : 2.0...2.6  
 100 s: (1.6...3.0)

Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 0.60...1.10  
 2nd speed rpm : 350  
 travel mm : 2.10...2.50  
 3rd speed rpm : 600  
 travel mm : 3.80...4.40  
 4th speed rpm : 950  
 travel mm : 7.20...7.40  
 5th speed rpm : 1200  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1020  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 900



Del.quantity : 235.0...238.0  
1000 : (231.5...241.5)  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...61

Testing:  
1st rack travel in: 10.60  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION  
Speed rpm : 380...480

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.60...11.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 440  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 400  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 950  
Del.quantity cm3/ : 215.0...222.0  
1000 s: (211.5...225.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 173.0...176.0  
1000 s: (169.5...179.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 990...1000

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...240.0  
1000 s: (206.0...244.0)

Remarks:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 o  
Edition : 13.12.89  
Replaces : 29.3.89  
Test oil : ISO-4113

Combination no. : 0 402 648 855

Injection pump  
Pump designation : PE8P120A320LS7823  
EP type number : 0 412 628 835  
Governor  
Governor design. : RQV350..1050PA870-5  
Governor no. : 0 421 813 735

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.40...1.60

2nd speed rpm : 800  
travel mm : 4.70...5.10

3rd speed rpm : 1100  
travel mm : 7.60...8.20

4th speed rpm : 1175  
travel mm : 9.20...9.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 234.0...237.0  
1000 : (231.0...240.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 13.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 250  
Minimum rack travel: 7.10  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 800  
Rack travel in m: 15.30...15.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1050  
Rack travel in m: 13.70...13.90 \*

4th pressure hPa : 1250  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 184.0...187.0  
1000 s: (181.0...190.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm



Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 800  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1050  
Rack travel in m: 13.70...13.90  
4th pressure hPa : 1500  
Rack travel in m: 14.80...15.00  
5th pressure hPa : -  
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm3/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 263.0...267.0  
1000 s: (260.0...270.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a11  
Edition : 24.05.89  
Replaces : 14.4.89  
Test oil : ISO-4113

Combination no. : 0 402 648 859

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350..950PA866-4  
Governor no. : 0 421 813 737

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 264.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 930

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...6.1

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.40...1.60

2nd speed rpm : 425  
travel mm : 2.40...2.60

3rd speed rpm : 800  
travel mm : 5.30...5.60

4th speed rpm : 1000  
travel mm : 7.80...8.20

5th speed rpm : 1100  
travel mm : 9.40...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 930  
Aneroid pressure h: 950  
Del.quantity : 206.0...208.0  
1000 : (203.0...211.0)  
Spread cm3 : 5.00  
1000 : (9.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 51...59

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 250  
Minimum rack travel: 8.20  
Speed rpm : 350  
Rack travel in mm : 5.60...6.10

### CONSTANT REGULATION

Speed rpm : 350...550

### TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 930  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 750  
Rack travel in m: 15.30...15.50  
3rd speed rpm : 900  
Rack travel in m: 14.20...14.40

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 11.00...11.40

#### Measurement

Speed 1/min : 600

1st pressure hPa : 450

H24

Rack travel in m: 11.80...12.00  
2nd pressure hPa : 700  
Rack travel in m: 13.90...14.10

### START CUT-OUT

Speed 1/min : 270 (290)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 950  
Speed rpm : 750  
Del.quantity cm3/ : 229.0...233.0  
1000 s: (226.0...236.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 950  
Speed rpm : 930  
Del.quantity cm3/ : 167.0...169.0 \*  
1000 s: (164.0...172.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 980...990

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 q  
Edition : 05.01.90  
Replaces : 11.5.89  
Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump  
Pump designation : PE8P120A320LS7816  
EP type number : 0 412 628 829  
Governor  
Governor design. : RQ300/950PA762-7  
Governor no. : 0 421 801 480

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm<sup>3</sup>/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600



Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 890  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 700  
Rack travel in m: 13.80...14.00  
3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1500  
Rack travel in m: 15.60...15.80  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 270.0...273.0  
1000 s: (267.0...276.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a14  
 Edition : 20.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 865  
 Injection pump  
 Pump designation : PE8P120A320LS7801-4  
 EP type number : 0 412 628 839  
 Governor  
 Governor design. : RQV350...1050PA866-5  
 Governor no. : 0 421 813 767

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.40

2nd speed rpm : 600  
 travel mm : 4.90...5.10

3rd speed rpm : 1100  
 travel mm : 8.00...8.50

4th speed rpm : 1170  
 travel mm : 9.20...9.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1100  
Del.quantity : 181.0...183.0  
1000 : (178.0...186.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 250  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 950  
Rack travel in m: 13.50...13.60  
4th speed rpm : 830  
Rack travel in m: 14.30...14.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 10.90...11.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : 420

H28

Rack travel in m: 12.60...12.80  
2nd pressure hPa : 600  
Rack travel in m: 13.20...13.40

#### START CUT-OUT

Speed 1/min : 270 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 152.0...154.0 \*  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a15  
Edition : 13.10.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 870

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350..1050PA866-6  
Governor no. : 0 421 813 810

Customer-spec. information  
Customer : MB-TKW

Engine : OM442 A

1st version kW : 260.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 800

travel mm : 4.80...5.10

3rd speed rpm : 1100

travel mm : 7.70...8.10

4th speed rpm : 1175

travel mm : 9.00...9.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1100  
Del.quantity : 181.0...183.0  
1000 : (178.0...186.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.40...6.00

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 950  
Rack travel in m: 13.50...13.60  
4th speed rpm : 830  
Rack travel in m: 14.30...14.50

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 11.10...11.40

##### Measurement

Speed 1/min : 600

1st pressure hPa : 420

J02

Rack travel in m: 11.80...12.00  
2nd pressure hPa : 600  
Rack travel in m: 13.40...13.60

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 152.0...154.0 \*  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a16  
 Edition : 15.12.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 878  
 Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQ300/950PA762-9  
 Governor no. : 0 421 801 510

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 269.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90

Speed rpm : 990...1000

2nd rack travel in: 4.00

Speed rpm : 1060...1090

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.2

Testing:

Speed rpm : 200

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.00...6.40

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75

2nd speed rpm : 950

Rack travel in m: 12.90...13.10

3rd speed rpm : 800

Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 800

Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 11.80...12.00

2nd pressure hPa : 500

Rack travel in m: 13.30...13.60

3rd pressure hPa : 950

Rack travel in m: 14.10...14.20 \*

4th pressure hPa : -

Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

J04

Aneroid pressure h: 1150

Speed rpm : 950

Del.quantity cm3/ : 190.0...193.0

1000 s: (187.0...196.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1150

Speed rpm : 750

Del.quantity cm3/ : 216.0...219.0

1000 s: (213.0...222.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 138.0...140.0

1000 s: (135.0...143.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 175.0...190.0

1000 s: (171.0...194.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a17  
Edition : 01.12.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 879

Injection pump  
Pump designation : PE8P120A320LS7801-4  
EP type number : 0 412 628 839  
Governor  
Governor design. : RQV350..1050PA842-5  
Governor no. : 0 421 813 836

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.90...2.10

2nd speed rpm : 700  
travel mm : 4.00...4.40

3rd speed rpm : 1100  
travel mm : 6.80...7.20

4th speed rpm : 1200  
travel mm : 8.30...8.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version



Speed rpm : 600  
Aneroid pressure h : 750  
Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 58...66

Testing:  
1st rack travel in: 14.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control Lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION  
Speed rpm : 350...550

TORQUE CONTROL  
Dimension a mm : 0.20  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 975  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.70

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 900  
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250  
Rack travel in m: 15.50...15.70  
5th pressure hPa : -  
Rack travel in m: 11.60...11.80

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm3/ : 227.0...230.0  
1000 s: (224.0...233.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 900  
Del.quantity cm3/ : 238.0...242.0  
1000 s: (235.0...245.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm3/ : 156.0...159.0 \*  
1000 s: (153.0...162.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 d  
Edition : 07.04.89  
Replaces : 1.7.88  
Test oil : ISO-4113

Combination no. : 0 402 649 802

Injection pump  
Pump designation : PE10P120A520LS7811  
EP type number : 0 412 629 802  
Governor  
Governor design. : RQV250...1150PA860  
Governor no. : 0 421 813 626

Customer-spec. information  
Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
: (4.85...5.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 13.30...13.40  
Del.quantity cm3/ : 28.4...28.6  
100 s: (28.1...28.9)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 500.0  
Rack travel in mm : 8.7...8.9  
Del.quantity cm3/ : 14.1...14.7  
100 s: (13.8...15.0)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40  
2nd speed rpm : 750  
travel mm : 5.90...6.50  
3rd speed rpm : 1150  
travel mm : 8.40...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 284.0...286.0  
1000 : (281.0...289.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 410...470

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.30...13.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 270  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 790  
Rack travel in m: 11.30...11.70

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0\*\*  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : 0 \*  
1000 s: (-)

2nd version  
Speed rpm : 500  
Rack travel in mm : < 8.00  
Del.quantity cm<sup>3</sup>/ : < 50.0 \*  
1000 s: (-)

3rd version  
Speed rpm : 500  
Rack travel in mm : 8.60...8.80  
Del.quantity cm<sup>3</sup>/ : 125.0 \*  
1000 s: (-)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 52.0...60.0  
1000 s: (-)

#### Remarks:

\* applies to cylinders 1, 2, 3, 7 and 9  
\*\* applies for cylinders 4, 5, 6, 8 and 10

#### APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 e  
Edition : 07.04.89  
Replaces : 30.9.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 649 806  
  
Injection pump  
Pump designation : PE10P120A520LS7819  
EP type number : 0 412 629 804  
Governor  
Governor design. : RQV300...1050PA896  
Governor no. : 0 421 813 715

Customer-spec. information  
Customer : MAN

Engine : D 2840 LF

1st version kW : 405.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
: (4.85...5.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.2  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.40  
2nd speed rpm : 500  
travel mm : 3.10...3.70  
3rd speed rpm : 800  
travel mm : 5.50...5.90  
4th speed rpm : 1050  
travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000

Del.quantity : 233.0...235.0  
1000 : (230.0...238.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 10.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 320...435

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 900  
Rack travel in m: 11.30...11.40

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 400  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 600

Rack travel in m: 10.40...10.70

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 220.0...224.0  
1000 s: (217.0...227.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 156.0...158.0  
1000 s: (153.0...161.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7932

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 d1  
Edition : 24.11.89  
Replaces : 7.2.89  
Test oil : ISO-4113

Combination no. : 0 402 649 807

Injection pump  
Pump designation : PE10P120A520LS7811  
EP type number : 0 412 629 802  
Governor  
Governor design. : RQV250...1150PA902  
Governor no. : 0 421 813 720

Customer-spec. information  
Customer : MAN

Engine : D 2840 LX

1st version kW : 603.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00  
                  : (4.85...5.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 13.70...13.80  
Del.quantity cm3/ : 29.6...29.8  
100 s : (29.3...30.1)  
Spread cm3 : 0.5  
100 s : (0.9)

2nd speed rpm : 500  
Rack travel in mm : 9.2...9.4  
Del.quantity cm3/ : 14.9...15.1  
100 s : (14.6...15.4)  
Spread cm3 : 0.8  
100 s : (1.2)  
3rd speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 5.2...6.0  
100 s : (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.50  
2nd speed rpm : 500  
travel mm : 3.80...4.20  
3rd speed rpm : 850  
travel mm : 6.50...6.90  
4th speed rpm : 1150  
travel mm : 9.50...9.70  
5th speed rpm : 1400  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1200  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
 Aneroid pressure h: 1600  
 Del.quantity : 296.0...298.0  
 1000 : (293.0...301.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
 position degrees: 57...65

Testing:

1st rack travel in: 12.70  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1290...1320  
 4th rack travel in: 1450  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
 position degrees: 18...26

Testing:

Speed rpm : 100  
 Minimum rack travel: 8.90  
 Speed rpm : 250  
 Rack travel in mm : 7.30...7.50  
 Rack travel in mm : 2.00  
 Speed rpm : 430...490

Aneroid/Altitude  
 Compensator Test

1st version

Setting  
 Speed rpm : 500  
 Pressure hPa : 1600  
 Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
 Rack travel in m: 9.20...9.40  
 2nd pressure hPa : 100  
 Rack travel in m: 9.60...9.70  
 3rd pressure hPa : 470  
 Rack travel in m: 12.20...12.60

START CUT-OUT

Speed 1/min : 200 (220)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 149.0...151.0  
 1000 s: (146.0...154.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)

## BREAKAWAY

1st version

1mm rack travel less than  
 full load rack tr: 12.70  
 Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 100.0...120.0\*\*  
 1000 s: (-)

Speed rpm : 100  
 Del.quantity cm3/ : 0 \*  
 1000 s: (-)  
 Rack travel in mm : 17.50

## HIGH IDLE

1st version

Speed rpm : 500  
 Rack travel in mm : < 7.50  
 Del.quantity cm3/ : 0 \*  
 1000 s: (-)

2nd version

Speed rpm : 500  
 Rack travel in mm : < 8.00  
 Del.quantity cm3/ : < 50.0 \*  
 1000 s: (-)

3rd version

Speed rpm : 500  
 Rack travel in mm : 8.90...9.10  
 Del.quantity cm3/ : 125.0  
 1000 s: (-)

## LOW IDLE

Speed rpm : 250  
 Rack travel in mm : 7.30...7.50  
 Del.quantity cm3/ : 52.0...60.0  
 1000 s: (-)

Remarks:

: MAN-NR. 2-7961

\* applies to cylinders 1, 2, 3, 7 and 9

\*\* applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 L 2  
Edition : 01.12.89  
Replaces : 17.2.89  
Test oil : ISO-4113

Combination no. : 0 402 649 808

Injection pump  
Pump designation : PE10P120A320LS7809-1  
EP type number : 0 412 629 801  
Governor  
Governor design. : RQ300/1050PA762-6  
Governor no. : 0 421 801 471

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM443 A

1st version kW : 331.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.30...13.40

Del.quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1165...1195

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.1

Testing:

Speed rpm : 200

Minimum rack travel: 9.20

Speed rpm : 300

Rack travel in mm : 6.80...7.40

Rack travel in mm : 2.00

Speed rpm : 395...435

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.30...13.40

2nd speed rpm : 750

Rack travel in m: 14.70...15.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 11.50...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : 300

Rack travel in m: 12.10...12.30

2nd pressure hPa : 550

Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 202.0...205.0

1000 s: (199.0...208.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 129.0...131.0

1000 s: (126.0...134.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 h  
Edition : 01.09.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 649 809  
  
Injection pump  
Pump designation : PE10P120A520LS7825  
EP type number : 0 412 629 805  
Governor  
Governor design. : RQV250...1150PA902-3  
Governor no. : 0 421 813 761

Customer-spec. information  
Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 28.4...28.6

100 s: (28.1...28.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm : 8.8...9.0

Del. quantity cm<sup>3</sup>/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

3rd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del. quantity cm<sup>3</sup>/ : 5.2...6.0 \*\*

100 s: (-)

Spread cm<sup>3</sup> : -

100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.10

2nd speed rpm : 450  
travel mm : 2.90...3.50

3rd speed rpm : 750  
travel mm : 5.50...5.90

4th speed rpm : 1150  
travel mm : 9.20...9.40

5th speed rpm : 1400  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 284.0...286.0  
1000 : (281.0...289.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 57...65

Testing:

1st rack travel in: 12.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24

Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 100  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 470  
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0\*\*  
1000 s: (-)  
Rack travel in mm : 18.50

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 0 \*  
1000 s: (-)  
Rack travel in mm : 18.50

HIGH IDLE

1st version

Speed rpm : 500  
Rack travel in mm : <7.00  
Del.quantity cm<sup>3</sup>/ : 0 \*  
1000 s: (-)

2nd version

Speed rpm : 500  
Rack travel in mm : <7.50  
Del.quantity cm<sup>3</sup>/ : <50.0  
1000 s: (-)

3rd version

Speed rpm : 500  
Rack travel in mm : 8.10...8.30  
Del.quantity cm<sup>3</sup>/ : 125.0  
1000 s: (-)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50

Del.quantity cm<sup>3</sup>/ : 52.0...60.0 \*\*  
1000 s: (-)

Remarks:

: MAN-NR. 2-7961

\* applies to cylinders 1, 2, 3, 7 and 9

\*\* applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 L 3  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 649 810

Injection pump  
Pump designation : PE10P120A320LS7809  
EP type number : 0 412 629 800  
Governor  
Governor design. : RQV350..1050PA870-6  
Governor no. : 0 421 813 766

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM443 LA

1st version kW : 401.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm<sup>3</sup>/ : 21.0...21.4

100 s: (20.7...21.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.90...2.10

2nd speed rpm : 700  
travel mm : 4.10...4.50

3rd speed rpm : 1100  
travel mm : 7.60...8.00

4th speed rpm : 1200  
travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 750  
Del.quantity : 210.0...214.0  
1000 : (207.0...217.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 36...44

#### Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.60  
Speed rpm : 350  
Rack travel in mm : 6.20...6.80

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.30...14.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 550  
Rack travel in m: 13.20...13.40  
3rd pressure hPa : 960  
Rack travel in m: 14.40...14.50

4th pressure hPa : 1100  
Rack travel in m: 14.80...15.00  
5th pressure hPa : -  
Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1300  
Speed rpm : 1050  
Del.quantity cm3/ : 224.0...226.0  
1000 s: (221.0...229.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 850  
Del.quantity cm3/ : 232.0...236.0  
1000 s: (229.0...239.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 1050  
Del.quantity cm3/ : 168.0...170.0  
1000 s: (165.0...173.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...136.0  
1000 s: (129.0...139.0)  
Spread cm3 : 8.00  
1000 s: (-)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

## Note remarks

Combination no. : 0 402 670 800

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

1st version



Control lever  
position degrees: 21...29

Testing:

1st rack travel in: 13.10  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 1000  
Speed rpm : 0.30...1.00

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 207.0...213.0  
1000 s: (204.0...216.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

:

Observe VDT-I-420/120

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 y 1  
Edition : 13.12.89  
Replaces : 21.8.87  
Test oil : ISO-4113

Combination no. : 0 402 670 802

Injection pump  
Pump designation : PE12P120A320LS7807  
EP type number : 0 412 620 806  
Governor  
Governor design. : RSV350...750POA825-2  
Governor no. : 0 421 833 250

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 444 A

1st version kW : 360.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.40...15.50

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.5

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 23...31

Testing:

1st rack travel in: 14.40  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...786  
4th rack travel in: 1000  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack trave: 13.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 212.0...218.0  
1000 s: (209.0...221.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.50  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)

Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 j 1  
Edition : 24.11.89  
Replaces : 7.2.89  
Test oil : ISO-4113

Combination no. : 0 402 670 804

Injection pump  
Pump designation : PE12P120A320LS7813-1  
EP type number : 0 412 620 811  
Governor  
Governor design. : RSV350...750POA825-5  
Governor no. : 0 421 833 277

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 441.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 16.50...16.60

Del.quantity cm3/ : 28.0...28.2

100 s: (27.7...28.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.1...5.3  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 280.0...282.0  
1000 : (277.0...285.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 20...28

Testing:

1st rack travel in: 13.10  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.2  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 d  
Edition : 13.12.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 670 807

Injection pump  
Pump designation : PE12P120A320LS7814-1  
EP type number : 0 412 620 819  
Governor  
Governor design. : RSV375..1050POA535-3  
Governor no. : 0 421 833 328

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 588.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
                  : (4.75...4.95)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
                  4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
                  180-225-240-285-300-  
                  345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.10...13.30

Del.quantity cm<sup>3</sup>/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1050

Del.quantity : 262.0...265.0

1000 : (259.0...268.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 375  
Rack travel in mm : 5.50...5.80

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 950  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 850  
Rack travel in m: 13.90...14.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1050  
Rack travel mm : 13.10...13.30

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 650  
Rack travel in m: 11.30...11.50  
3rd pressure hPa : 1420  
Rack travel in m: 13.50...13.70  
4th pressure hPa : -  
Rack travel in m: 7.30...7.60

FUEL DELIVERY CHARACTERISTICS

K01

1st version  
Aneroid pressure h: 1600  
Speed rpm : 1030  
Del.quantity cm3/ : 264.0...267.0  
1000 s: (261.0...270.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 750  
Del.quantity cm3/ : 286.0...289.0  
1000 s: (283.0...292.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 750  
Del.quantity cm3/ : 286.0...289.0  
1000 s: (283.0...292.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 121.0...123.0  
1000 s: (118.0...126.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks: :

Observe VDT-I-420/120

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IFS 23,1 b  
Edition : 11.05.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 676 806  
  
Injection pump  
Pump designation : PE6P130A320RS7168  
EP type number : 0 412 636 810  
Governor  
Governor design. : RSV300...1500P2A542  
Governor no. : 0 421 833 308

Customer-spec. information  
Customer : ISOTTA

Engine : ID 38 SS 6 V

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3- 4- 5- 6

Phasing : 0-45-120-165-240-285

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 19.7...20.0

100 s: (19.3...20.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...7.9

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.6...3.0)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500

Del.quantity : 197.0...200.0

1000 : (193.5...203.5)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 60...68

### Testing:

1st rack travel in: 11.00

Speed rpm : 1540...1550

2nd rack travel in: 4.00

Speed rpm : 1595...1625

3rd rack travel in: 4.00

Speed rpm : 1620...1650



4th rack travel in: 1760  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3  
Speed rpm : 300  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1500  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.00...12.20  
3rd speed rpm : 275  
Rack travel in m: 13.20...13.80

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1540...1550

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IFS 23,1 c  
Edition : 11.05.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 676 807  
  
Injection pump  
Pump designation : PE6P130A320LS7169  
EP type number : 0 412 636 811  
Governor  
Governor design. : RSV300...1500P2A542  
Governor no. : 0 421 833 308

Customer-spec. information  
Customer : ISOTTA

Engine : ID 38 SS 6 V

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 19.7...20.0

100 s: (19.3...20.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...7.9

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.6...3.0)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500

Del.quantity : 197.0...200.0

1000 : (193.5...203.5)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 60...68

### Testing:

1st rack travel in: 11.00

Speed rpm : 1540...1550

2nd rack travel in: 4.00

Speed rpm : 1595...1625

3rd rack travel in: 4.00

Speed rpm : 1620...1650

4th rack travel in: 1760  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 100  
Speed rpm : 300  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1500  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.00...12.20  
3rd speed rpm : 275  
Rack travel in m: 13.20...13.80

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1540...1550

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g  
Edition : 24.11.89  
Replaces : 29.2.88  
Test oil : ISO-4113

Combination no. : 0 402 678 802

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RSV650...1050POA826  
Governor no. : 0 421 833 253

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 234.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + -., : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0  
Rack travel in mm : 4.1...4.3  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1080  
Del.quantity : 163.0...165.0  
1000 : (160.0...168.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 34...42

Testing:

1st rack travel in: 10.60  
Speed rpm : 1110...1120  
2nd rack travel in: 4.00  
Speed rpm : 1135...1150  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 4.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 650...710

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 900  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 1000  
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

Note remarks

Combination no. : 0 402 678 803

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 240.0  
Rated speed : 1500

Test oil  
inlet temp., C . : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                  : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order      : 8- 7- 2- 6- 3- 5-
                  : 4- 1
```

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance  $\pm$  : 0.50 (0.75)

Time to cyl. no. : 8

1st speed      rpm : 700

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread            cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## Control-Lever position

**Degree: -3**

Speed rpm : 800

Rack travel in mm : 0.30...0.70

1st version

Speed rpm : 700

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread      cm<sup>3</sup>      : 5.00  
                 1000      : (9.00)

1st version

Control Lever

position degrees: 24...32

### Testing:

1st rack travel in: 14.10  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 15.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 350...410

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
2nd speed rpm : 900  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 1000  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 233.0...239.0  
1000 s: (230.0...242.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.10  
Speed rpm : 750...755

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g 2  
Edition : 01.12.89  
Replaces : 30.3.87  
Test oil : ISO-4113

Combination no. : 0 402 678 804

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RSV350...750POA825-4  
Governor no. : 0 421 833 261

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 255.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h : 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 24.1...24.3  
100 s: (23.8...24.6)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.4...5.8  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 241.0...243.0  
1000 : (238.0...246.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version



Control Lever  
position degrees: 24...32

Testing:

1st rack travel in: 14.70  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...5.80  
Rack travel in mm : 2.00  
Speed rpm : 350...410

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

2nd speed rpm : 900  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 1000  
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 246.0...252.0  
1000 s: (243.0...255.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.70  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

APPLICATION :

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g 6  
 Edition : 20.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 678 812  
 Injection pump  
 Pump designation : PE8P120A320LS7801-2  
 EP type number : 0 412 628 825  
 Governor  
 Governor design. : RSV350...1050POA535-  
 2  
 Governor no. : 0 421 833 318

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 260.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness : 6.00X1.50X1000  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (4.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + -, : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.4...6.0  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1100

Del.quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...6.00  
Rack travel in mm : 2.00  
Speed rpm : 410...480

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 950  
Rack travel in m: 13.10...13.30  
3rd speed rpm : 830  
Rack travel in m: 13.80...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.50

Measurement  
Speed 1/min : 500

1st pressure hPa : 420  
Rack travel in m: 11.90...12.10  
2nd pressure hPa : 600  
Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 700  
Del.quantity cm3/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

Observe VDT-I-420/120

## Note remarks

Combination no. : 0 402 745 807

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

Phasing : 0-72-144-216-288

Tolerance  $\pm$  : 0.50 (0.75)

Time to cyl. no. : 5

1st speed      rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread            cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## - FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

# Testing:

1st rack travel in: 13.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

# Testing:

Speed rpm : 200  
Minimum rack trave: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 485...525

## TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.40...14.60  
2nd speed rpm : 750  
Rack travel in m: 14.90...15.10

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

### Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 400  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 750  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : 850  
Rack travel in m: 14.60...14.80  
5th pressure hPa : -  
Rack travel in m: 11.90...12.20

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1095...1110

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 v  
Edition : 02.10.89  
Replaces : 15.8.89  
Test oil : ISO-4113

Combination no. : 0 402 745 808

Injection pump  
Pump designation : PES5P120A720LS7175  
EP type number : 0 412 725 807  
Governor  
Governor design. : RQ300/1050PA774-4  
Governor no. : 0 421 801 453

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

### Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.60...5.90  
Rack travel in mm : 2.00  
Speed rpm : 370...410

### TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

### Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm3/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm3/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 m 3  
Edition : 02.10.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 745 809  
Injection pump  
Pump designation : PES5P120A720LS7160  
EP type number : 0 412 725 802  
Governor  
Governor design. : RQV300..1050PA940  
Governor no. : 0 421 813 824

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.3

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.30

2nd speed rpm : 600  
travel mm : 4.90...5.10

3rd speed rpm : 800  
travel mm : 5.80...6.10

4th speed rpm : 1100  
travel mm : 8.20...8.60

5th speed rpm : 1175  
travel mm : 9.50...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP



1st version  
Speed rpm : 600  
Aneroid pressure h: 650  
Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 12.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.70...6.30

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.60...13.80  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.10...13.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 400  
Rack travel in m: 12.50...12.70

3rd pressure hPa : 750  
Rack travel in m: 13.20...13.30  
4th pressure hPa : 850  
Rack travel in m: 13.60...13.80  
5th pressure hPa : -  
Rack travel in m: 10.80...11.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 o 3  
 Edition : 02.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 745 810  
 Injection pump  
 Pump designation : PES5P120A720LS7163  
 EP type number : 0 412 725 803  
 Governor  
 Governor design. : RQV300..1050PA940-1  
 Governor no. : 0 421 813 825

Customer spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.30

2nd speed rpm : 600  
 travel mm : 4.90...5.10

3rd speed rpm : 800  
 travel mm : 5.80...6.10

4th speed rpm : 1100  
 travel mm : 8.20...8.60

5th speed rpm : 1175  
 travel mm : 9.50...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 600  
Aneroid pressure h: 800  
Del.quantity : 235.0...237.0  
1000 : (232.0...240.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

### Testing:

1st rack travel in: 12.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 16...24

### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.90

### CONSTANT REGULATION

Speed rpm : 300...400

### TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

### Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.20

3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 j  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 812  
Injection pump  
Pump designation : PES6P120A320RS7136  
EP type number : 0 412 726 809  
Governor  
Governor design. : RQV275...1000PA853  
Governor no. : 0 421 813 610

Customer-spec. information  
Customer : RVI

Engine : MIDR062045

1st version kW : 176.5  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 18.00...21.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00  
& maximum rack tra: 18.0...21.0  
Difference, CS : 3.50...5.50

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.1...4.3

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.60...1.80

2nd speed rpm : 550  
travel mm : 4.20...4.60

3rd speed rpm : 850  
travel mm : 6.20...6.60

4th speed rpm : 1000  
travel mm : 7.20...7.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.70  
Speed rpm : 275  
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION  
Speed rpm : 315...425

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 1000  
Rack travel in m: 10.90...11.00  
3rd speed rpm : 800  
Rack travel in m: 11.60...11.70  
4th speed rpm : 900  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.90...12.00

Measurement  
Speed 1/min : 500

K23

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 400  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 200  
Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm3/ : 155.0...159.0  
1000 s: (152.0...162.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1065...1075

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...160.0  
1000 s: (126.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 j 1  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 813  
 Injection pump  
 Pump designation : PES6P120A32ORS7136  
 EP type number : 0 412 726 809  
 Governor  
 Governor design. : RQV275...1000PA855  
 Governor no. : 0 421 813 611

Customer-spec. information  
 Customer : RVI

Engine : MIDR062045

1st version kW : 198.5  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 18.00...21.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00  
 & maximum rack tra: 18.0...21.0  
 Difference, CS : 3.50...5.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.60...1.80

2nd speed rpm : 550  
 travel mm : 4.20...4.60

3rd speed rpm : 850  
 travel mm : 6.20...6.60

4th speed rpm : 1000  
 travel mm : 7.20...7.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 184.0...186.0  
1000 : (181.0...189.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 60...68

Testing:

1st rack travel in: 10.90  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:

Speed rpm : 200  
Minimum rack travel: 5.70  
Speed rpm : 275  
Rack travel in mm : 4.10...4.30

#### CONSTANT REGULATION

Speed rpm : 315...425

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 400

Rack travel in m: 11.50...11.60

3rd pressure hPa : 200

Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 178.0...184.0  
1000 s: (175.0...187.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1065...1075

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...160.0  
1000 s: (126.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e  
Edition : 12.01.90  
Replaces : 30.10.89  
Test oil : ISO-4113

Combination no. : 0 402 746 842

Injection pump  
Pump designation : PES6P120A720RS7164  
EP type number : 0 412 726 816  
Governor  
Governor design. : RQV325...875PA848-17  
K  
Governor no. : 0 421 815 200

Customer-spec. information  
Customer : MACK

Engine : EMC6 300L 4VH

1st version kW : 200.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 11.00...13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 14.90...15.00

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 3.00...3.40

3rd speed rpm : 850  
travel mm : 5.90...6.10

4th speed rpm : 1000  
travel mm : 7.40...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200



Del.quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

#### Testing:

1st rack travel in: 13.90  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1160  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.20  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 14.90...15.00  
2nd speed rpm : 510  
Rack travel in m: 16.80...17.00  
3rd speed rpm : 700  
Rack travel in m: 15.60...15.80  
4th speed rpm : 600  
Rack travel in m: 16.40...16.70  
5th speed rpm : 420  
Rack travel in m: 0.00...16.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting

Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 16.80...17.00

#### Measurement

Speed 1/min : 510

1st pressure hPa : -

K27

Rack travel in m: 10.90...11.30  
2nd pressure hPa : 375  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 735  
Rack travel in m: 15.70...16.10

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm3/ : 305.0...311.0  
1000 s: (302.0...314.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 156.0...160.0  
1000 s: (154.0...162.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 10.90...11.30

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 12,2 e1  
 Edition : 24.11.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 844

Injection pump  
 Pump designation : PES6P120A320RS7162  
 EP type number : 0 412 726 819  
 Governor  
 Governor design. : RQ750PA836  
 Governor no. : 0 421 801 373

Customer spec. information  
 Customer : PERKINS

Engine : 2006 TAG

1st version kW : 280.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 3.8...4.4

100 s: (3.5...4.7)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 379.0...381.0

1000 : (376.0...384.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

#### Testing:

1st rack travel in: 12.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 820

Speed rpm : 0.00...1.00

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 300.0...340.0  
1000 s: (296.0...344.0)

Remarks:

:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 12,2 e  
Edition : 29.03.89  
Replaces : 27.10.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 844  
  
Injection pump  
Pump designation : PES6P120A320RS7162  
EP type number : 0 412 726 819  
Governor  
Governor design. : RQ750PA836-1  
Governor no. : 0 421 801 454

Customer-spec. information  
Customer : PERKINS

Engine : 2006 TAG

1st version kw : 280.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 3.8...4.4

100 s: (3.5...4.7)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 379.0...381.0

1000 : (376.0...384.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 785...795

4th rack travel in: 820

Speed rpm : 0.00...1.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 300.0...340.0  
1000 s: (296.0...344.0)

Remarks:

:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1a13  
 Edition : 15.12.89  
 Replaces : 31.10.89  
 Test oil : ISO-4113

Combination no. : 0 402 746 850

Injection pump  
 Pump designation : PES6P120A720RS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...900PA848-24  
 K  
 Governor no. : 0 421 815 207

Customer-spec. information  
 Customer : MACK

Engine : E6-350

1st version kW : 261.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

---

Rack travel in mm : 14.80...14.90

---

Del.quantity cm<sup>3</sup>/ : 24.8...25.0  
 100 s: (24.5...25.3)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm<sup>3</sup>/ : 3.9...4.5  
 100 s: (3.7...4.7)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 3.10...3.30  
 3rd speed rpm : 850  
 travel mm : 5.90...6.10  
 4th speed rpm : 1000  
 travel mm : 7.50...7.70

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 1200

Del.quantity : 248.5...250.5  
1000 : (245.5...253.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 13.80  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.60  
Speed rpm : 325  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 625  
Rack travel in m: 15.20...15.30  
3rd speed rpm : 700  
Rack travel in m: 15.00...15.10  
4th speed rpm : 500  
Rack travel in m: 0.00...14.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 625  
Pressure hPa : 1200  
Rack travel mm : 15.20...15.30

#### Measurement

Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 310

Rack travel in m: 10.20...10.30  
3rd pressure hPa : 710  
Rack travel in m: 13.70...14.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 271.0...277.0  
1000 s: (268.0...280.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 130.5...134.5  
1000 s: (128.5...136.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...170.0  
1000 s: (120.0...180.0)  
Rack travel in mm : 8.30...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5184-P10

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 a3  
 Edition : 02.01.90  
 Replaces : 31.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 852  
 Injection pump  
 Pump designation : PES6P120A72ORS7157  
 EP type number : 0 412 726 814  
 Governor  
 Governor design. : RQV325...900PA909K  
 Governor no. : 0 421 815 210

Customer spec. information  
 Customer : MACK

Engine : E7-400

1st version kW : 298.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900



Aneroid pressure h: 1200  
Del.quantity : 275.0...277.0  
1000 : (272.0...280.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 14.80  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 15.80...15.90  
2nd speed rpm : 625  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 700  
Rack travel in m: 15.40...15.60  
4th speed rpm : 500  
Rack travel in m: 0.00...13.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 15.80...15.90

#### Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.50...8.90

2nd pressure hPa : 325  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 790  
Rack travel in m: 13.80...14.20

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 302.5...308.5  
1000 s: (299.5...311.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 157.5...161.5  
1000 s: (155.5...163.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.80  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.80...11.40

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5185-P6

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 a4  
 Edition : 15.12.89  
 Replaces : 31.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 853  
 Injection pump  
 Pump designation : PES6P120A720RS7157  
 EP type number : 0 412 726 814  
 Governor  
 Governor design. : RGV325...900PA909-1K  
 Governor no. : 0 421 815 211

Customer-spec. information  
 Customer : MACK

Engine : E7-350

1st version kW : 261.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. , C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.20

3rd speed rpm : 650  
 travel mm : 5.60...5.80

4th speed rpm : 900  
 travel mm : 8.30...8.50

5th speed rpm : 1100  
 travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200  
Del.quantity : 233.5...235.5  
1000 : (230.5...238.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 625  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 500  
Rack travel in m: 11.60...12.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.80...13.90

#### Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.00...8.40  
2nd pressure hPa : 325  
Rack travel in m: 9.40...9.50

3rd pressure hPa : 685  
Rack travel in m: 12.10...12.50

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 266.0...272.0  
1000 s: (263.0...275.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 153.0...157.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 10.30...10.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5185-P2

#### Bow dimension:

Sliding-sleeve position = 37.0 mm  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 a 3  
Edition : 24.11.89  
Replaces : 25.8.89  
Test oil : ISO-4113

Combination no. : 0 402 746 854

Injection pump  
Pump designation : PES6P120A720LS7114-3  
EP type number : 0 412 726 820  
Governor  
Governor design. : RQ300/1050PA911  
Governor no. : 0 421 801 476

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 257.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600  
Rack travel in mm : 13.60...13.80  
Del.quantity cm3/ : 22.9...23.1  
100 s: (22.6...23.4)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.8...6.2  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 800  
Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

### Testing:

1st rack travel in: 12.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 700  
Rack travel in m: 14.10...14.30

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 600  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1100  
Rack travel in m: 13.90...14.10  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 229.0...233.0  
1000 s: (226.0...236.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 244.0...247.0  
1000 s: (241.0...250.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

#### Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 e  
Edition : 24.11.89  
Replaces : 15.8.89  
Test oil : ISO-4113

Combination no. : 0 402 746 855

Injection pump  
Pump designation : PES6P120A720LS7176  
EP type number : 0 412 726 821  
Governor  
Governor design. : RQ300/1050PA897  
Governor no. : 0 421 801 452

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 12.50  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.50...13.70  
2nd speed rpm : 750  
Rack travel in m: 14.70...14.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.10...14.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.30...11.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

#### Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SSC 10,5 f  
Edition : 13.12.89  
Replaces : 16.6.89  
Test oil : ISO-4113

Combination no. : 0 402 746 856

Injection pump  
Pump designation : PES6P130A320LS7173  
EP type number : 0 412 736 802  
Governor  
Governor design. : RQV300...750PA914  
Governor no. : 0 421 813 747

Customer-spec. information  
Customer : SSCM

Engine : UD25-L6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 48.0...48.3

100 s: (47.6...48.6)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.3

Del.quantity cm<sup>3</sup>/ : 4.7...5.3

100 s: (4.3...5.7)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.50

2nd speed rpm : 600  
travel mm : 5.10...5.70

3rd speed rpm : 750  
travel mm : 7.70...7.90

4th speed rpm : 1000  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 480.0...483.0

1000 : (476.5...486.5)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

1st version



Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 11.30  
Speed rpm : 790...800  
2nd rack travel in: 4.00  
Speed rpm : 840...870

LOW IDLE 1  
Control lever  
position degrees: 61...69

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 315...445

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 790...800

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 9,5 a 1  
 Edition : 15.12.89  
 Replaces : 28.6.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 857  
 Injection pump  
 Pump designation : PES6P120A720RS7177  
 EP type number : 0 412 726 823  
 Governor  
 Governor design. : RQ275/1100PA915  
 Governor no. : 0 421 801 478

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8460.41.601

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.30

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.30  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 330...370

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 600  
Rack travel in m: 12.60...12.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.80  
2nd pressure hPa : 320  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 270  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...155.0  
1000 s: (121.0...159.0)

Remarks:

#### APPLICATION

Ship



### Testing:

1st rack travel in: 13.90  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 370...410

### TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 850  
Rack travel in m: 15.60...15.80

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.20...15.40

### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 700  
Rack travel in m: 14.00...14.20  
3rd pressure hPa : 1300  
Rack travel in m: 15.40...15.60  
4th pressure hPa : 1450  
Rack travel in m: 15.90...16.10  
5th pressure hPa : -  
Rack travel in m: 10.00...10.50

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1600  
Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 269.0...272.0  
1000 s: (266.0...275.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 298.0...301.0  
1000 s: (295.0...304.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 a 5  
Edition : 02.10.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 746 859

Injection pump  
Pump designation : PES6P120A720LS7114-2  
EP type number : 0 412 726 815  
Governor  
Governor design. : RQV300..1050PA940-2  
Governor no. : 0 421 813 826

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.30

2nd speed rpm : 600  
travel mm : 4.90...5.10

3rd speed rpm : 800  
travel mm : 5.90...6.20

4th speed rpm : 1100  
travel mm : 8.10...8.50

5th speed rpm : 1175  
travel mm : 9.70...10.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 13.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20

### CONSTANT REGULATION

Speed rpm : 300...450

### TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.20...14.40  
3rd speed rpm : 700  
Rack travel in m: 14.70...14.90

### Aneroid/Altitude

#### Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 14.00...14.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 500  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 1100

Rack travel in m: 14.20...14.40  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 10.40...10.70

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 234.0...238.0  
1000 s: (231.0...341.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 246.0...249.0  
1000 s: (243.0...252.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 d 3  
Edition : 02.10.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 860  
  
Injection pump  
Pump designation : PES6P120A720LS7161  
EP type number : 0 412 726 817  
Governor  
Governor design. : RQV300..1050PA940-3  
Governor no. : 0 421 813 827

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600  
Rack travel in mm : 14.10...14.30  
Del.quantity cm<sup>3</sup>/ : 20.1...20.3  
100 s: (19.8...20.6)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.8...6.2  
Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.30  
2nd speed rpm : 600  
travel mm : 4.90...5.10  
3rd speed rpm : 800  
travel mm : 5.90...6.20  
4th speed rpm : 1100  
travel mm : 8.10...8.50  
5th speed rpm : 1175  
travel mm : 9.70...10.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1080  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP



1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del.quantity : 201.0...203.0  
1000 : (198.0...206.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 1.20  
2nd speed rpm : 1050  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 750  
Rack travel in m: 14.80...15.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.10...14.30

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.40  
3rd pressure hPa : 800

Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.50...11.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm3 : 8.00  
1000 s: (12.)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Spread cm3 : 8.00  
1000 s: (12.00)  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 f  
Edition : 28.09.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 862  
  
Injection pump  
Pump designation : PES6P120A720RS7183  
EP type number : 0 412 726 825  
Governor  
Governor design. : RQV325...875PA878-11  
K  
Governor no. : 0 421 815 213

Customer spec. information  
Customer : MACK TRUCKS

Engine : EM 6-300L

1st version kW : 183.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 6.00...8.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 4.1...4.7

100 s: (3.9...4.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 2.50...2.80

3rd speed rpm : 600  
travel mm : 4.10...4.30

4th speed rpm : 875  
travel mm : 7.30...7.50

5th speed rpm : 1000  
travel mm : 8.70...9.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875  
Aneroid pressure h: 1500  
Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 10.20  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 510  
Rack travel in m: 16.60...16.80  
3rd speed rpm : 700  
Rack travel in m: 13.30...13.50  
4th speed rpm : 600  
Rack travel in m: 15.50...15.70  
5th speed rpm : 450  
Rack travel in m: 0.00...16.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1500  
Rack travel mm : 16.60...16.80

Measurement  
Speed 1/min : 510

L25

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 435  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : 795  
Rack travel in m: 14.60...15.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 510  
Del.quantity cm3/ : 308.0...314.0  
1000 s: (305.0...317.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 154.0...158.0  
1000 s: (152.0...160.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 915...925

INTERMEDIATE RATED SPEED  
Rack travel in mm : 11.20  
Speed rpm : 805

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 8.70...9.10

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 41.0...47.0  
1000 s: (39.0...49.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MACK # 313GC5174-P8

y y FEHLENDEN TEXT ÜBERSETZEN y y

Delivery-valve spring pre-tension

3.0...3.2 mm.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e1  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 864  
 Injection pump  
 Pump designation : PES6P120A72ORS7164  
 EP type number : 0 412 726 816  
 Governor  
 Governor design. : RQV325...875PA848-12  
 K  
 Governor no. : 0 421 815 215

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EC6-350 4VH

1st version kW : 261.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 12.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 16.00...16.10

Del.quantity cm<sup>3</sup>/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm<sup>3</sup>/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.40...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 255.5...257.5  
1000 : (252.5...260.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 15.00  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 16.00...16.10  
2nd speed rpm : 625  
Rack travel in m: 16.50...16.70  
3rd speed rpm : 550  
Rack travel in m: 0.00...16.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 625  
Pressure hPa : 1200  
Rack travel mm : 16.50...16.70

#### Measurement

Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 9.40...9.80  
2nd pressure hPa : 265  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm<sup>3</sup>/ : 280.0...286.0  
1000 s: (277.0...289.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 141.5...145.5  
1000 s: (139.5...147.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 15.00  
Speed rpm : 950...960

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 13.70  
Speed rpm : 850

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 9.40...9.80

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.30...4.50  
Del.quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5181P12

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e2  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 865

Injection pump  
 Pump designation : PES6P120A72ORS7164  
 EP type number : 0 412 726 816  
 Governor  
 Governor design. : RQV325...875PA848-13  
 K  
 Governor no. : 0 421 815 216

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EM6-275L 4VH

1st version kW : 205.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 12.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

---

Rack travel in mm : 13.90...14.00

---

Del.quantity cm3/ : 20.1...20.3

---

100 s: (19.8...20.6)

---

Spread cm3 : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.10

3rd speed rpm : 850  
 travel mm : 6.20...6.40

4th speed rpm : 1000  
 travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 1200

Del.quantity : 201.5...203.5  
1000 : (198.5...206.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 12.90  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 510  
Rack travel in m: 16.00...16.20  
3rd speed rpm : 800  
Rack travel in m: 14.20...14.40  
4th speed rpm : 600  
Rack travel in m: 15.30...15.50  
5th speed rpm : 420  
Rack travel in m: 0.00...15.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 16.00...16.20

#### Measurement

Speed 1/min : 510

1st pressure hPa : -

MD2

Rack travel in m: 10.70...11.10  
2nd pressure hPa : 285  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 505  
Rack travel in m: 15.40...15.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm3/ : 281.0...287.0  
1000 s: (279.0...290.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 152.0...156.0  
1000 s: (150.0...158.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 915...925

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 10.30  
Speed rpm : 805

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 185.0...225.0  
1000 s: (175.0...235.0)  
Rack travel in mm : 10.70...11.10

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5181P8

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 a5  
Edition : 28.09.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 866  
Injection pump  
Pump designation : PES6P120A72ORS7157  
EP type number : 0 412 726 814  
Governor  
Governor design. : RQV325...875PA909-2K  
Governor no. : 0 421 815 217

Customer-spec. information  
Customer : MACK TRUCKS

Engine : EM7-300L

1st version kW : 224.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 2.80...3.20

3rd speed rpm : 650  
travel mm : 5.60...5.80

4th speed rpm : 900  
travel mm : 8.30...8.50

5th speed rpm : 1100  
travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 875  
Aneroid pressure h: 1200

Del.quantity : 212.5...214.5  
1000 : (209.5...217.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 510  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 400  
Rack travel in m: 0.00...13.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.95...14.15

#### Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.10...8.50  
2nd pressure hPa : 370  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 740

Rack travel in m: 12.30...12.70

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm3/ : 296.5...302.5  
1000 s: (293.5...305.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 157.5...161.5  
1000 s: (155.5...163.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack travel: 11.70  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.40...11.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5185-P10  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e3  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 867  
 Injection pump  
 Pump designation : PES6P120A72ORS7164  
 EP type number : 0 412 726 816  
 Governor  
 Governor design. : RQV325...875PA848-27  
 K  
 Governor no. : 0 421 815 218

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EC6-350 4VH

1st version kW : 261.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 12.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 16.00...16.10

Del.quantity cm<sup>3</sup>/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm<sup>3</sup>/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.40...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 255.5...257.5  
1000 : (252.5...260.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 15.00  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 16.00...16.10  
2nd speed rpm : 625  
Rack travel in m: 16.50...16.70  
3rd speed rpm : 550  
Rack travel in m: 0.00...16.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 625  
Pressure hPa : 1200  
Rack travel mm : 16.50...16.70

#### Measurement

Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 9.40...9.80  
2nd pressure hPa : 265  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm<sup>3</sup>/ : 280.0...286.0  
1000 s: (277.0...289.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 141.5...145.5  
1000 s: (139.5...147.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 15.00  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 9.40...9.80

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.30...4.50  
Del.quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5181P10

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e4  
Edition : 02.01.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 746 867

Injection pump  
Pump designation : PES6P120A720RS7164  
EP type number : 0 412 726 816  
Governor  
Governor design. : RQV325...900PA848-27  
K  
Governor no. : 0 421 815 218

Customer-spec. information  
Customer : MACK

Engine : EC6-350 4VH

1st version kW : 261.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 12.00...13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
Rack travel in mm : 16.00...16.10  
Del.quantity cm3/ : 25.5...25.7  
100 s: (25.2...26.0)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 325.0  
Rack travel in mm : 4.3...4.5  
Del.quantity cm3/ : 3.9...4.5  
100 s: (3.7...4.7)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 3.00...3.40  
3rd speed rpm : 850  
travel mm : 5.90...6.10  
4th speed rpm : 1000  
travel mm : 7.40...7.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1120  
Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 1200

Del.quantity : 255.5...257.5  
1000 : (252.5...260.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 15.00  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 16.00...16.10  
2nd speed rpm : 625  
Rack travel in m: 16.50...16.70  
3rd speed rpm : 550  
Rack travel in m: 0.00...16.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 16.50...16.70

#### Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 9.40...9.80  
2nd pressure hPa : 265  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 280.0...286.0  
1000 s: (277.0...289.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 141.5...145.5  
1000 s: (139.5...147.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 15.00  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 9.40...9.80

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5181P10

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e5  
 Edition : 15.12.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 868

Injection pump  
 Pump designation : PES6P120A720RS7164  
 EP type number : 0 412 726 816  
 Governor  
 Governor design. : RQV325...875PA848-28  
 K  
 Governor no. : 0 421 815 219

Customer-spec. information  
 Customer : MACK

Engine : EM6-275L 4VH

1st version kW : 205.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 12.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

---

Rack travel in mm : 13.60...13.70

---

Del.quantity cm3/ : 19.6...19.8  
 100 s: (19.4...20.0)

---

Spread cm3 : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 4.3...4.5  
 Del.quantity cm3/ : 3.9...4.5  
 100 s: (3.7...4.7)

---

Spread cm3 : 0.8  
 100 s: (1.2)

---

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 2.80...3.10  
 3rd speed rpm : 850  
 travel mm : 6.20...6.40  
 4th speed rpm : 1000  
 travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 1200

Del.quantity : 196.0...198.0  
1000 : (194.0...200.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

#### Testing:

1st rack travel in: 12.60  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1045...1075  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 510  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 750  
Rack travel in m: 13.80...14.10  
4th speed rpm : 600  
Rack travel in m: 14.90...15.10  
5th speed rpm : 450  
Rack travel in m: 0.00...15.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 15.20...15.40

#### Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 10.70...11.10  
2nd pressure hPa : 265  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 450  
Rack travel in m: 14.00...14.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm3/ : 259.5...265.5  
1000 s: (257.5...267.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 152.0...156.0  
1000 s: (150.0...158.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 185.0...225.0  
1000 s: (175.0...235.0)  
Rack travel in mm : 10.70...11.10

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5181P6

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e6  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 869

Injection pump  
 Pump designation : PES6P120A720RS7164  
 EP type number : 0 412 726 816  
 Governor  
 Governor design. : RQV325...875PA848-29  
 K  
 Governor no. : 0 421 815 220

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EMC6 250L 4VH

1st version kW : 196.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)

Rack travel in mm : 12.00...13.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

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Rack travel in mm : 13.00...13.10

---

Del.quantity cm<sup>3</sup>/ : 18.4...18.6

---

100 s: (18.2...18.8)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm<sup>3</sup>/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.20

3rd speed rpm : 850  
 travel mm : 6.20...6.40

4th speed rpm : 1000  
 travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 900

Del.quantity : 184.0...186.0  
1000 : (182.0...188.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 12.00  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1045...1065  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack trave: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 510  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 600  
Rack travel in m: 14.00...14.20  
4th speed rpm : 450  
Rack travel in m: 0.00...14.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 14.90...15.10

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 10.40...10.80  
2nd pressure hPa : 205

Rack travel in m: 11.70...11.80  
3rd pressure hPa : 460  
Rack travel in m: 13.70...14.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 510  
Del.quantity cm3/ : 252.0...258.0  
1000 s: (250.0...260.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 152.0...156.0  
1000 s: (150.0...158.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 10.40...10.80

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P4

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 a6  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 870

Injection pump  
 Pump designation : PES6P120A720RS7157  
 EP type number : 0 412 726 814  
 Governor  
 Governor design. : RQV325...875PA878-14  
 K  
 Governor no. : 0 421 815 222

Customer-spec. information  
 Customer : MACK

Engine : EM7-250L 4VH

1st version kW : 187.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

---

Rack travel in mm : 10.40...10.50

---

Del. quantity cm<sup>3</sup>/ : 17.4...17.6  
 100 s: (17.1...17.9)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 4.7...4.9  
 Del. quantity cm<sup>3</sup>/ : 4.0...4.6  
 100 s: (3.8...4.8)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

---

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.30...1.60  
 2nd speed rpm : 500  
 travel mm : 3.40...4.00  
 3rd speed rpm : 900  
 travel mm : 6.70...6.90  
 4th speed rpm : 1075  
 travel mm : 8.40...8.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 900  
 Del. quantity : 174.0...176.0  
 1000 : (171.0...179.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:  
1st rack travel in: 9.40  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1020...1050  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 510  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 450  
Rack travel in m: 0.00...11.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 11.90...12.10

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 7.80...8.20  
2nd pressure hPa : 235  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 485  
Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 510  
Del.quantity cm3/ : 244.0...250.0  
1000 s: (241.0...253.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 151.0...155.0  
1000 s: (149.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 915...925

INTERMEDIATE RATED SPEED  
Rack travel in mm : 9.80  
Speed rpm : 805.0

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 10.10...10.30

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MACK # 313GC5179-P28

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 c  
Edition : 28.09.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 871  
Injection pump  
Pump designation : PES6P120A720RS7157  
EP type number : 0 412 726 814  
Governor  
Governor design. : RQV325...900PA929K  
Governor no. : 0 421 815 223

Customer-spec. information  
Customer : MACK TRUCKS

Engine : E7-400

1st version kW : 298.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 275.0...277.0  
1000 : (272.0...280.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 14.80  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 15.80...15.90  
2nd speed rpm : 625  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 700  
Rack travel in m: 15.40...15.60  
4th speed rpm : 500  
Rack travel in m: 0.00...13.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 15.80...15.90

#### Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.10...8.50  
2nd pressure hPa : 325

Rack travel in m: 10.20...10.30  
3rd pressure hPa : 790  
Rack travel in m: 13.80...14.20

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 302.5...308.5  
1000 s: (299.5...311.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 157.5...161.5  
1000 s: (155.5...163.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.80  
Speed rpm : 940...950

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 14.70  
Speed rpm : 850

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.40...11.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5185-P8  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm





# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 c1  
Edition : 28.09.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 872  
Injection pump  
Pump designation : PES6P120A720RS7157  
EP type number : 0 412 726 814  
Governor  
Governor design. : RQV325...900PA929-1K  
Governor no. : 0 421 815 224

Customer-spec. information  
Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
(2.70...2.90)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.80...13.90

Del.quantity cm<sup>3</sup>/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm<sup>3</sup>/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 233.5...235.5  
1000 : (230.5...238.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 625  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 500  
Rack travel in m: 11.60...12.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.80...13.90

#### Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.00...8.40  
2nd pressure hPa : 325  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 685

M21

Rack travel in m: 12.10...12.50

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 266.0...272.0  
1000 s: (263.0...275.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 153.0...157.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 940...950

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 12.70  
Speed rpm : 850

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 10.30...10.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5185-P4  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 c2  
Edition : 28.09.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 873  
  
Injection pump  
Pump designation : PES6P120A720RS7157  
EP type number : 0 412 726 814  
Governor  
Governor design. : RQV325...875PA929-2K  
Governor no. : 0 421 815 225

Customer-spec. information  
Customer : MACK TRUCKS

Engine : EM7-300L

1st version kW : 224.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 212.5...214.5  
1000 : (209.5...217.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 11.70  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 510  
Rack travel in m: 13.95...14.15  
3rd speed rpm : 400  
Rack travel in m: 0.00...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.95...14.15

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.10...8.50  
2nd pressure hPa : 370  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 740

Rack travel in m: 12.30...12.70

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm3/ : 296.5...302.5  
1000 s: (293.5...305.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 157.5...161.5  
1000 s: (155.5...163.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 915...925

INTERMEDIATE RATED SPEED  
Rack travel in mm : 11.90  
Speed rpm : 805

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.40...11.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5185-P12  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 a7  
 Edition : 28.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 874  
 Injection pump  
 Pump designation : PES6P120A720RS7157  
 EP type number : 0 412 726 814  
 Governor  
 Governor design. : RQV325...850PA909-3K  
 Governor no. : 0 421 815 230

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : E7-300

1st version kW : 220.0  
 Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm<sup>3</sup>/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1200

Del.quantity : 204.0...206.0  
1000 : (202.0...208.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

#### Testing:

1st rack travel in: 11.20  
Speed rpm : 890...900  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 12.50...12.70  
3rd speed rpm : 500  
Rack travel in m: 0.00...11.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 12.50...12.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 265  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 241.0...247.0  
1000 s: (239.0...249.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 148.0...152.0  
1000 s: (146.0...154.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 890...900

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.00...10.60

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MACK # 313GC5185-P14  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 c3  
Edition : 28.09.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 876  
Injection pump  
Pump designation : PES6P120A72ORS7157  
EP type number : 0 412 726 814  
Governor  
Governor design. : RGV325...850PA929-3K  
Governor no. : 0 421 815 232

Customer spec. information  
Customer : MACK TRUCKS

Engine : E7-300 4VH

1st version kW : 220.0  
Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1200

Del.quantity : 204.0...206.0  
1000 : (202.0...208.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 11.20  
Speed rpm : 890...900  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 12.50...12.70  
3rd speed rpm : 500  
Rack travel in m: 0.00...11.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 12.50...12.70

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 265  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 275 (285)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 241.0...247.0  
1000 s: (239.0...249.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 148.0...152.0  
1000 s: (146.0...154.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 890...900

INTERMEDIATE RATED SPEED  
Rack travel in mm : 11.30  
Speed rpm : 805.0

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.00...10.60

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P16

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 i  
Edition : 15.12.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 746 878

Injection pump  
Pump designation : PES6P120A320RS7191  
EP type number : 0 412 726 828  
Governor  
Governor design. : RQV275...1000PA927  
Governor no. : 0 421 813 808

Customer-spec. information  
Customer : RVI

Engine : MIDR 06-35-40

1st version kW : 314.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
: (4.75...4.95)  
Rack travel in mm : 12.50...13.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Del. quantity cm<sup>3</sup>/ : 27.7...27.9  
100 s: (27.4...28.2)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 9.2...9.4  
Del. quantity cm<sup>3</sup>/ : 2.3...2.9  
100 s: (2.0...3.2)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.10...1.50  
2nd speed rpm : 500  
travel mm : 3.60...4.20  
3rd speed rpm : 700  
travel mm : 5.50...5.90  
4th speed rpm : 1000  
travel mm : 7.60...7.80  
5th speed rpm : 1400  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1060  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del. quantity : 277.0...279.0  
1000 : (274.0...282.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 63...71

### Testing:

1st rack travel in: 12.90  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 7...15

### Testing:

Speed rpm : 200  
Minimum rack travel: 5.80  
Speed rpm : 275  
Rack travel in mm : 4.50...4.70

## CONSTANT REGULATION

Speed rpm : 330...430

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.90...14.00

## Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.30  
2nd pressure hPa : 600  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 200  
Rack travel in m: 9.70...10.10

## START CUT-OUT

Speed 1/min : 225 (245)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 268.0...274.0  
1000 s: (265.0...277.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack travel: 12.90  
Speed rpm : 1065...1075

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...175.0  
1000 s: (141.0...179.0)

## LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SAC 10,5 a  
Edition : 02.01.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 879  
  
Injection pump  
Pump designation : PES6P130A320LS7173-1  
EP type number : 0 412 736 803  
Governor  
Governor design. : RQV400...750PA928  
Governor no. : 0 421 813 809

Customer-spec. information  
Customer : SACM

Engine : UD25-L6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 48.0...48.3

100 s: (47.6...48.6)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 400.0

Rack travel in mm : 4.7...5.3

Del. quantity cm<sup>3</sup>/ : 4.7...5.3

100 s: (4.3...5.7)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 0.50...0.90

2nd speed rpm : 500

travel mm : 1.90...2.10

3rd speed rpm : 650

travel mm : 1.90...2.10

4th speed rpm : 750

travel mm : 5.00...5.80

5th speed rpm : 900

travel mm : 11.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del. quantity : 480.0...483.0

1000 : (476.5...486.5)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

### 1st version

### Testing:

1st rack travel in: 11.30

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 777...790  
4th rack travel in: 900  
Speed rpm : 0.00...1.00

LOW IDLE 1

Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 400  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 3.00  
Speed rpm : 300...340

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 15,9 b3  
Edition : 02.10.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 880  
Injection pump  
Pump designation : PES6P120A320RS7105  
EP type number : 0 412 726 800  
Governor  
Governor design. : RQV350...900PA935-1  
Governor no. : 0 421 813 820

Customer-spec. information  
Customer : BAUDOUIN

Engine : 6P15-2

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 4.5...4.7  
Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.70...1.00  
2nd speed rpm : 500  
travel mm : 3.10...3.80  
3rd speed rpm : 800  
travel mm : 6.50...6.90  
4th speed rpm : 900  
travel mm : 7.80...8.10

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 940  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del.quantity : 339.0...341.0  
1000 : (336.0...344.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 11.00  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 21...29

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.10  
Speed rpm : 350  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 940...950

Remarks:

:

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 i  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 881  
  
Injection pump  
Pump designation : PES6P120A720LS7195  
EP type number : 0 412 726 829  
Governor  
Governor design. : RQ300/1100PA805-1  
Governor no. : 0 421 801 505

Customer-spec. information  
Customer : MB-NFZ

Engine : OM447ha

1st version kW : 206.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 19.7...19.9  
100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.8...6.2  
Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.7...1.9)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 650  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 750  
Del.quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 650  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.40...9.70

Measurement

Speed 1/min : 500  
1st pressure hPa : 250  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 500  
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 188.0...191.0  
1000 s: (185.0...194.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

APPLICATION

Ship



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 c 4  
 Edition : 12.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 776 807  
 Injection pump  
 Pump designation : PES6P120A720LS7120-2  
 EP type number : 0 412 726 832  
 Governor  
 Governor design. : RSV350...1050POA529  
 -3  
 Governor no. : 0 421 833 332

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.00...14.20

Del.quantity cm<sup>3</sup>/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 650

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 48...56

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 950  
Rack travel in m: 13.70...13.90  
3rd speed rpm : 875  
Rack travel in m: 14.20...14.40  
4th speed rpm : 750  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 600  
Rack travel mm : 14.00...14.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.40  
3rd pressure hPa : 850  
Rack travel in m: 14.30...14.50  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

N09

Aneroid pressure h: 1200  
Speed rpm : 1030  
Del.quantity cm3/ : 194.0...197.0  
1000 s: (191.0...200.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 219.0...224.0  
1000 s: (216.0...227.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1080...1090

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

: KRUPP

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 8,1 C 2  
 Edition : 17.01.90  
 Replaces : 19.05.88  
 Test oil : ISO 4113  
 Combination no. : 0 403 446 114  
 Injection pump  
 Pump designation : PES6MW100/72ORS1012  
 EP type number : 0 413 406 008  
 Governor  
 Governor design. : RQV300...1100MW19  
 Governor no. : 0 420 083 014

Customer-spec. information  
 Customer : FIA

Engine : 8365.25.500

1st version kW : 132.4  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00  
 : (2.85...3.05)  
 Rack travel in mm : 9.0...12.0

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 1150...11.60

Del.quantity cm3/ : 9.60...9.80  
 100 s: (9.40...10.00)

Spread cm3 : 0.35  
 100 s: (0.6)

2nd speed rpm : 300  
 Rack travel in mm : 6.3...6.4  
 Del.quantity cm3/ : 1.1...1.5  
 100 s: (0.9...1.8)  
 Spread cm3 : 0.35  
 100 s: 0.35  
 100 s: 1.10..

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1225  
 travel mm : 10.00...10.50  
 2nd speed rpm : 1150  
 travel mm : 9.10...9.30  
 3rd speed rpm : 500  
 travel mm : 2.90...3.50  
 4th speed rpm : 300  
 travel mm : 1.10...1.50

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 500  
 Del.quantity : 96.0...98.0  
 1000 : (94.0...100.0)  
 Spread cm3 : 3.5  
 1000 : (6.0)

2nd version  
 Speed rpm : 500  
 Aneroid pressure h: -

Del.quantity cm<sup>3</sup>/ : 75.0...77.0  
1000 s: (73.0...78.0)  
Spread cm<sup>3</sup> : 3.6  
1000 s: (6.0)

#### RATED SPEED

1st version  
Control lever  
position degrees: 45...53

#### Testing:

1st rack travel in: 10.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
5th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.0  
Speed rpm : 300  
Rack travel in mm : 6.30...6.40  
Rack travel in mm : 2.00  
Speed rpm : 385...445

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 1000  
Rack travel in m: 11.50...11.60

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 270  
Rack travel mm : 12.10...12.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.50  
2nd pressure hPa : 500  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : -  
Rack travel in m: 11.20...11.30

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 101.0...105.0  
1000 s: (99.0...107.0)  
Spread cm<sup>3</sup> : 5.0  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 75.0...77.0  
1000 s: (73.0...78.0)  
Spread cm<sup>3</sup> : 3.5  
1000 s: (6.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.40  
Del.quantity cm<sup>3</sup>/ : 11.50...15.50  
1000 s: (9.0...18.0)  
Spread cm<sup>3</sup> : 3.5  
1000 s: (5.5)

#### Remarks:

Acceleration from start to full load  
with n = 170...250 min. -1

After changing plunger and barrel  
assembly from 1 418 415 045 to ..083,  
perform setting/testing in accordance  
with test specifications of injection-  
pump assembly 0 403 446 203.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 K 4  
Edition : 12.01.90  
Replaces : 09.06.89  
Test oil : ISO-4113

Combination no. : 0 403 446 164

Injection pump  
Pump designation : PES6MW100/32ORS1016  
EP type number : 0 413 406 010  
Governor  
Governor design. : RQV300...1300MW25-4  
Governor no. : 0 420 083 094

Customer-spec. information  
Customer : RVI

Engine : MIDR06.02-12

1st version kW : 113.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.60...6.80

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.80

Speed rpm : 1370...1380

2nd rack travel in: 4.00

Speed rpm : 1485...1515

4th rack travel in: 1650

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control Lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.1  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Speed rpm : 200  
Maximum rack trave: 3.20

CONSTANT REGULATION  
Speed rpm : 340...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 143  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : -  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 115  
Rack travel in m: 10.00...10.30

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm3/ : 82.0...86.0  
1000 s: (80.0...88.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 56.0...58.0  
1000 s: (54.0...60.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1370...1380

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S  
 Edition : 02.01.90  
 Replaces : 15.08.89  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 208  
 Injection pump  
 Pump designation : PES6MW100/320RS1171  
 EP type number : 0 413 406 156  
 Governor  
 Governor design. : RQV300...1400MW97  
 Governor no. : 0 420 083 158

Customer spec. information  
 Customer : RVI

Engine : MIDS060212C

1st version kW : 97.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.50...9.60

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...5.70

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1570  
 travel mm : 9.20...9.60

2nd speed rpm : 1450  
 travel mm : 8.30...8.50

3rd speed rpm : 500  
 travel mm : 3.00...3.40

4th speed rpm : 300  
 travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del.quantity : 75.0...77.0  
 1000 : (73.0...79.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 120...128

Testing:

1st rack travel in: 8.50  
Speed rpm : 1460...1470  
2nd rack travel in: 4.00  
Speed rpm : 1565...1595  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 3.9

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm3/ : 66.5...69.5  
1000 s: (64.0...72.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.50  
Speed rpm : 1460...1470

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 1  
 Edition : 02.01.90  
 Replaces : 05.08.88  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 209  
 Injection pump  
 Pump designation : PES6MW100/320RS1171  
 EP type number : 0 413 406 156  
 Governor  
 Governor design. : RQV300...1300MW80-1  
 Governor no. : 0 420 083 159

Customer-spec. information  
 Customer : RVI

Engine : M1DS060212B

1st version kW : 113.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.40...5.60

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

Speed rpm : 1370...1380  
2nd rack travel in: 4.00  
Speed rpm : 1520...1550  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.80...8.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 9.30...9.40  
2nd pressure hPa : 200  
Rack travel in m: 10.20...10.50  
3rd pressure hPa : 700  
Rack travel in m: 10.80...10.90

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm3/ : 81.0...84.0  
1000 s: (78.5...86.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 43.0...45.0  
1000 s: (41.0...47.0)

#### BREAKAWAY

N17

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1370...1380

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with  
prestroke 3.00...3.10 mm at barrel 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 78  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 216  
 Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1400MW48-8  
 Governor no. : 0 420 083 175

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.10...9.50

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 300

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 9.70  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.6

Testing:

Speed rpm : 100  
Minimum rack trave: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.50...8.70

TORQUE CONTROL

Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 950  
Rack travel in m: 11.70...11.90  
4th speed rpm : 1200  
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.50...8.70  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 79  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 217  
 Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1300MW48-9  
 Governor no. : 0 420 083 176

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1440

travel mm : 9.30...9.70

2nd speed rpm : 1350

travel mm : 8.60...8.80

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control Lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.9

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 800  
Rack travel in m: 11.80...12.10  
3rd speed rpm : 585  
Rack travel in m: 12.00...12.20  
4th speed rpm : 1100  
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 75.5...78.5  
1000 s: (73.0...81.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 585  
Del.quantity cm<sup>3</sup>/ : 68.5...71.5  
1000 s: (66.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1340...1350

N21

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 2  
Edition : 02.01.90  
Replaces : 31.03.89  
Test oil : ISO-4113

Combination no. : 0 403 446 220

Injection pump  
Pump designation : PES6MM100/320RS1171  
EP type number : 0 413 406 156  
Governor  
Governor design. : RQV300...1400MM80-3  
Governor no. : 0 420 083 183

Customer-spec. information  
Customer : RVI

Engine : MIDR 06.02.12D

1st version kW : 134.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...5.70

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1590

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 750

Del.quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 10.10

Speed rpm : 1470...1480  
2nd rack travel in: 4.00  
Speed rpm : 1600...1630  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.10...9.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : 80  
Rack travel in m: 9.60...9.70  
2nd pressure hPa : 200  
Rack travel in m: 10.30...10.60  
3rd pressure hPa : 750  
Rack travel in m: 11.10...11.20

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 86.5...89.5  
1000 s: (84.0...92.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 42.0...44.0  
1000 s: (40.0...46.0)

#### BREAKAWAY

N23

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1470...1480

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 95.0...115.0  
1000 s: (92.0...118.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with  
prestroke 3.00...3.10 mm at barrel 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 82  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 225  
 Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RGV300...1400MW48-11  
 Governor no. : 0 420 083 190

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.3

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
 travel mm : 9.20...9.60

2nd speed rpm : 1450  
 travel mm : 8.30...8.50

3rd speed rpm : 550  
 travel mm : 2.80...3.40

4th speed rpm : 300  
 travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 1000  
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 67.5...70.5  
1000 s: (65.0...73.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 U  
Edition : 01.12.89  
Replaces : 13.10.89  
Test oil : ISO-4113

Combination no. : 0 403 446 227

Injection pump  
Pump designation : PES6MW100/32ORS1182  
EP type number : 0 413 406 167  
Governor  
Governor design. : RQV350...1200MW46-19  
Governor no. : 0 420 083 191

Customer spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 182.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 800

Del.quantity : 133.5...135.5

1000 : (131.5...137.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1260...1280  
2nd rack travel in: 4.00  
Speed rpm : 1395...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 220  
Rack travel mm : 11.00...11.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 450  
Rack travel in m: 12.10...12.40  
3rd pressure hPa : 800  
Rack travel in m: 12.70...12.80

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm3/ : 130.0...134.0  
1000 s: (128.0...136.0)  
Spread cm3 : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 98.5...100.5  
1000 s: (96.5...102.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1260...1280

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.  
Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.